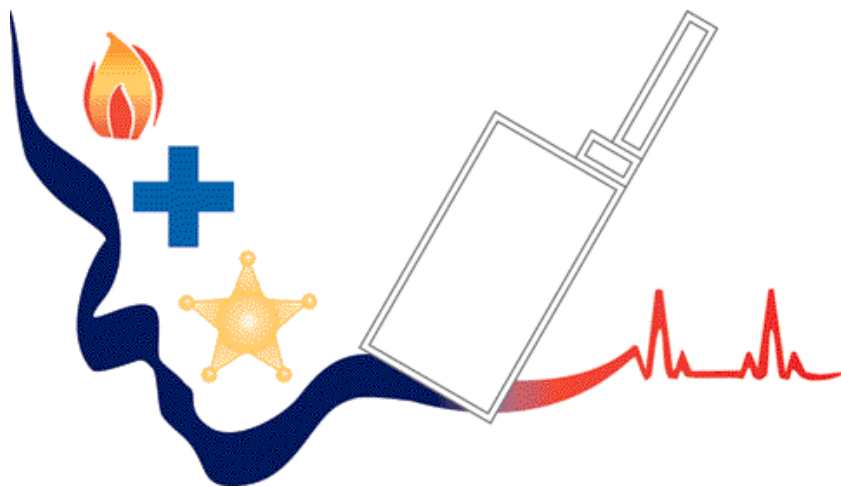


MUTUAL AID AND COMMON FREQUENCIES 2005



Montana Department of Administration
Public Safety Radio Communications Program



OFFICE OF THE GOVERNOR
STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR



JOHN BOHLINGER
LT. GOVERNOR

To Montana's Public Safety Community:

We have long recognized the importance of public safety communications in the delivery of vital services to Montanans. Recent events have proven that interagency communications between all levels of government are the keys to effective, coordinated emergency response. The Montana Homeland Security Strategic Plan identified Interoperable Communications as Goal #2.

Montana is moving forward to establish statewide interoperability, a "system of systems" that will link the independent wireless voice and data systems, including 9-1-1 and public safety radio systems, used by federal, state, local, tribal and private sector responders. This will ultimately allow all parties to exchange voice and data communications on demand, in real time.

In this spirit, I am pleased to present the third edition of our Mutual Aid and Common Frequencies manual. Over 5,000 copies have been distributed since its first printing in 1990. This manual will continue to be a staple for communications planning across Montana as we achieve the goal of interoperability.

The Mutual Aid and Common Frequencies manual provides practical suggestions on how our vital communications resources can be used under a variety of conditions as well as a complete collection of the rules, policies and procedures. Disaster or emergency response procedures via radio communications are graphically depicted for ease of use.

Montana's mutual aid radio plans continue to be recognized around the country as a model of cooperation. Interoperability is bringing a common ground and shared information and service to our law enforcement, fire, and EMS radio systems that were once independent and isolated. These improved interagency communications will continue to bring greater security to our emergency service providers.

In that spirit of cooperation, we offer this third edition for your future planning and operations in your efforts to make Montana the safest place for all our citizens. I commend your dedication to the State of Montana.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Schweitzer".

Brian Schweitzer
Governor

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STATE OF MONTANA

Mutual Aid and Common Frequencies

June 2005

Montana Department of Administration
Public Safety Radio Communications Program

What is Interoperability?

Interoperability is the ability of public safety providers - law enforcement, firefighters, EMS, emergency management, public utilities, transportation and other personnel - to exchange voice and data communications on demand, in real time. It is the term that describes how radio communications systems should operate between and among agencies and jurisdictions that respond to common emergencies. Differing incident response protocols, planning priorities, funding priorities and funding cycles can make acquiring and deploying interoperable systems difficult. Furthermore, limited availability of radio frequency spectrum for law enforcement and emergency response can also impede interoperability.

Six Levels of Interoperability

The International Association of Public-Safety Officials (APCO) defines a framework of six different interoperability levels that you can select from based on your goals and resources.

Level 1: Swap Radios

- Simplest, most basic interoperability approach
- One agency or department provides extras of its own radios to another department working a common emergency scene

Level 2: Talkaround

- Allows individuals to talk directly with each other, radio to radio as they work an emergency in a small geographic area
- Simple and cost-efficient, but works best when there are a maximum of three agencies responding

Level 3: Mutual Aid

- Requires dedicated spectrum and infrastructure to deliver communications and interoperability - most large urban areas, regions and states have mutual aid networks in place

Level 4: Gateway/Console Patch

- Uses specialized boxes to enable the connection of two otherwise incompatible communication systems
- Ideal solution to temporarily connect incompatible communications systems
- Cost efficient with an effective range that equals the sum of two systems being linked

Level 5: System-Specific Roaming

- Like roaming within a cellular system - user can maintain communication even if traveling outside of coverage area of home system, but only if agreements are in place to do so

Level 6: Standards-Based Shared Systems

- Involves different systems operating on a standards-based, shared infrastructure with users working on both their home system and shared network
- Useful in all scenarios from small to massive scale
- Wide area, seamless coverage is economical since agencies share costs

It all starts with Planning. Interoperability does not just happen because the technology is in place. The process of working through the disaster scenarios requires agencies to get together in advance to ensure a much more coordinated response.

Planning

- Determine best practices, leveraging the experience of others
- Include end users to facilitate the adoption of standard policies and procedures

Leadership

- Creating a team helps you answer questions about current and future requirements
- Establishing a workable governance model

Partnership

- Officials from the involved agencies together
- Select the technology solutions

Funding

- Analyze funding alternatives
- Cost sharing between agencies lets stakeholders enjoy economies of scale

Practice

- Regularly practice the plan
- Review the plan periodically to ensure that all stakeholders are ready for action

<http://www.mt.gov/itsd/techmt/pssb.asp>

This manual presents the State of Montana Mutual Aid & Common Frequencies Plans originally developed in 1990, and have since been revised. The formal plans presented here in the appendices, specify VHF-high band frequencies for mutual aid and common use in Montana and outline their purposes. The bulk of this manual is devoted to basic policies and procedures, practical application, and licensing of the frequencies.

Part I covers general information on mutual aid and common frequencies.

Part II covers law enforcement frequencies and applications.

Part III covers fire frequencies and applications.

Part IV covers emergency medical services frequencies and applications.

Part V covers disaster and emergency services frequencies and applications.

Part VI covers search and rescue frequencies and applications.

Part VII covers amateur radio roles in public safety communications.

Part VIII covers management and administrative information, including contact agencies, interagency agreements and licensing.

Fourteen appendices are included with the reference material.

The radio frequency spectrum is a valuable resource. When agencies and individuals agree to share portions of it, they carry a responsibility to adhere to recognized policies and procedures for the benefit of all. The plans presented in this manual have been developed for the benefit of all Montana public safety agencies.

Please contact our agency using the information below with suggestions of how cooperative communications could work better for you.

Public Safety Radio Communications Program
Montana Department of Administration
101 N. Rodney, Weinstein Building
PO Box 200115
Helena, Montana 59620-0015
(406) 444-3581

STATE OF MONTANA
MUTUAL AID AND COMMON FREQUENCIES

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STATE OF MONTANA
MUTUAL AID AND COMMON FREQUENCIES

Part I
General Information

Part I - General Information

The Montana public safety community relies heavily on radio. It connects responders to their dispatchers, field managers, each other, and ultimately to the public they serve. Radio provides dispatchers the ability to alert one or a group of responders, regardless of where they may be, of service calls. It provides responders with a means of communicating their needs and actions independent of fixed facilities, such as telephones. In the field, radio provides responders the ability to manage incident response, independent of location, and through functional channeling of communications. And those responders recognize that radio provides the most vital tool for their own safety, as well.

Mutual aid and common frequencies have come to be recognized as the most valuable public safety radio resource because they are the means by which responders from different agencies and different public safety services can communicate and interoperate. Rarely does an incident of any magnitude occur in which a single agency is the lone and sole service provider. Whether they are the standby EMS and fire suppression resources during a barricaded suspect call or the traffic control and evacuation resources during an urban interface fire, public safety agencies need to interoperate in today's world of incident response.

No degree of interoperability is possible without common communications.

In Montana, fourteen mutual aid and six common frequencies provide the basis for interagency radio communications.

This manual will use the term *mutual aid* to refer to frequencies designated for interagency communications that are licensed statewide. Authorization for their use is given through agreement with the State of Montana. Some may also be licensed for local use directly through the FCC. Procedures for both types of authorization are covered in Part VIII, "Management and Administration".

The term *common* will refer to frequencies designated for interagency communications, but not licensed statewide as mutual aid. They must be licensed by the using agency or used under agreement with a license holder for communications with that entity. Some are only available by agreement for communications with the license holder (e.g. State Lands and U.S. Forest Service common channels). For purposes of this manual, the term "common" will be used for frequencies recognized across the state. Some jurisdictions using central dispatch have agreed on their own "common" channel, but these will be referred to only in passing.

Authorization

Authority to use radio frequencies can come by one of two primary means: license and interagency agreement. Land mobile radio licensing for state and local public safety agencies is the responsibility of the Federal Communications Commission (FCC). Federal agencies rely on the Interdepartmental Radio Advisory Council (IRAC) for frequency authorization.

Interagency agreements serve an important purpose in Montana public safety radio as well as elsewhere. When an agency licensed for a particular frequency allows another agency access to that frequency, a degree of communications interoperability is established where otherwise there may have been none. Such an agreement means that the licensing agency is agreeing to consider the other agency's units as its own for use of the frequency. Everyone is obligated by the terms of the license; the agreements themselves may further restrict use. It should be noted that agreements are generally for mobile use only - permanent base stations must be specifically listed with the FCC.

Authorization procedures for common frequencies are covered in Part VIII.

Radio licenses are rarely granted for exclusive use. In Montana, frequency coordinators strive to make public safety agencies exclusive users within their jurisdictions, but increasing demands make this more and more difficult. A single agency is generally established as the primary user of a given frequency within its jurisdiction. Since fixed transmitters are often sited on mountain tops here, coordinators must examine interference potentials far beyond that jurisdiction.

The primary user of a mutual aid or common frequency is the one with the most urgent traffic - and there may be dozens of users within interference range. Users of Montana mutual aid and common frequencies are asked to remember that these frequencies are a critical shared resource.

Priority Use Levels

Five priority use levels are established for communications on mutual aid and common frequencies. Higher priority traffic takes precedent over lower.

- 1. Immediate Peril - An immediate threat to human life exists**
- 2. Disaster or Extreme Emergency - An imminent threat to human life or of large scale property destruction exists**
- 3. Routine Emergency - Distinguished from the above by scale or nearness of threat**
- 4. Urgent Administrative and Itinerant**
- 5. Training, Drills, and Administrative**

Color Names

The term "mutual aid" means different things to different people, even when restricted to radio. When used to name a frequency or particular channel, it often leads to confusion over just which mutual aid frequency is being referred to. In public safety radio where clarity and simplicity of communications are essential, long and contrived names for basic tools are burdensome. For this reason, the color names on the following page are offered for use in reference to mutual aid and common frequencies. Each is also given a descriptive title to clarify its use. Color names were chosen because the names are short, commonly recognized, and have been linked with associative memory. The actual colors are not intended to be painted on radio control heads or

otherwise used where different shades are indistinguishable or colorblind persons may mistake them.

Communications Protocols

The need for clarity and simplicity in communications goes far beyond the naming of channels. Across the country, modern emergency communications protocols emphasize the use of clear text, common terminology, and standard procedures to assure interoperability.

<i>Mutual Aid Frequencies</i>		
<u>Frequency</u>	<u>Color</u>	<u>Usage</u>
153.905 MHz	GOLD	State Common Mutual Aid
155.475	BLUE	National Law Enforcement Emergency
155.790	SILVER	State Law Enforcement Mutual Aid
153.800	BLACK	State Tactical Team Coordination
154.070	RED	State Fire Mutual Aid
154.280	MAROON	State Fire Command and Control
154.265	CORAL	State Fire Ground #1
154.295	SCARLET	State Fire Ground #2
153.830	RUBY	State Fire Repeater
159.345	GARNET	State Fire Repeater Control
155.280	WHITE	State Local Hospital to Ambulance
155.340	TAN	State Regional Hospital to Ambulance
155.325	GRAY	EMS Central Region Dispatch & Paging
155.385	PINK	EMS East/West Region Dispatch & Paging
<i>Common Frequencies</i>		
<u>Frequency</u>	<u>Color</u>	<u>Usage</u>
155.820 MHz	BROWN	State DES Direction and Control
155.160	VIOLET	National Search and Rescue
155.220	PURPLE	State Search and Rescue
151.220	YELLOW	State Forestry - Department of State Lands
171.475	GREEN	U.S. Forest Service Common

1. CLEAR TEXT

The use of codes, particularly agency-specific and ten-codes, has been found to be a barrier in the transmission of information. While codes may ideally reduce the length of transmissions, in practice the time gained is lost in repeated messages and explanations of unfamiliar terms. The most negative effect of codes is a reduction in communications interoperability during multi-agency response.

For these reasons clear text or plain language is strongly encouraged on all mutual aid

<i>Mutual Aid Repeater Frequencies</i>		
<u>Frequency</u>	<u>Color</u>	<u>Usage</u>
172.225 Base TX	Alpha	State Common Mutual Aid Emergency Repeater Use
170.475 Base RX		
172.375 Base TX	Bravo	State Common Mutual Aid Emergency Repeater Use
170.575 Base RX		
(15 Watt Power Out Limit)		

<i>General Use Interoperability Narrowband Frequencies</i>		
Frequency	Designation	Usage
154.4525	Charlie	General Purpose Interoperability Channels for all fire, EMS, law enforcement, and medical agencies including local, state and federal users.
155.7525	Delta	
158.7375	Echo	
159.4725	Fox	
(50 Watt Power Out Limit)		

and common channels. Encryption is prohibited because it largely eliminates interoperability and causes other users to cease monitoring the affected channel. It also requires a degree of cooperation between agencies that suggests a normal operational channel should be used for the communications.

The guide on the next two pages is offered as a clear text alternative to ten-codes. It is taken from Incident Command System, Fire Protection Publications, Oklahoma State University.

2. COMMON TERMINOLOGY

Common terminology for emergency services has evolved as the Incident Command System (ICS) has spread nationwide. Three elements of emergency response have been established where common terminology is essential (ICS-120):

- **Organizational Functions** - A standard set of major functions and functional units has been predesignated and named for the ICS. Terminology for the organizational elements is standard and consistent.
- **Resource Elements** - Resources refer to the combination of personnel and equipment used in tactical incident operations. Common names have been established for all resources used within ICS. Any resource that varies in capability because of size or power, for example helicopters, engines, or rescue units, is clearly typed as to capability.

- Facilities - Common identifiers are used for those facilities in and around the incident area that will be used during the course of the incident. These facilities include such things as the command post, incident base, and staging areas.

3. SPAN OF CONTROL

Span-of-control is essential for both safety and planning purposes. It is suggested that a single individual have a span-of-control from three to seven, with five considered average.

Mutual aid frequencies offer additional channels of communications for the hierarchical organization generated by a proper span-of-control. Users should use as many channels as are necessary, within the guidelines established here. Under practical conditions, this means that a single channel during an incident response would ideally have no more than a single manager and three to seven subordinates.

4. STANDARD PROCEDURES

The following five-step, positive message acknowledgement sequence is suggested for emergency communications:

- Calling unit gives the name of the called unit, followed by its own.
For example: "Headwaters Staging, Rae Engine 2," where the engine is trying to contact the incident staging area.
- The called unit responds with the reverse ("Rae Engine 2, Headwaters Staging").

International Phonetic Alphabet

A ALPHA	N NOVEMBER
B BRAVO	O OSCAR
C CHARLIE	P PAPA
D DELTA	Q QUEBEC
E ECHO	R ROMEO
F FOXTROT	S SIERRA
G GOLF	T TANGO
H HOTEL	U UNIFORM
I INDIA	V VICTOR
J JULIETTE	W WHISKEY
K KILO	X X-RAY
L LIMA	Y YANKEE
M MIKE	Z ZULU

ICS CLEAR TEXT GUIDE

Unreadable	Used when signal received is not clear. In most cases, try to add the specific trouble. Example: "Unreadable, background noise."
Loud and Clear	Self-explanatory
Stop Transmitting	Self-explanatory
Copy, Copies	Used to acknowledge message received. Unit radio identifier must also be used. Example: "Engine 2675, copies."
Affirmative	Yes
Negative	No
Respond, Responding	Used during dispatch - proceed to or proceeding to an incident. Example: "Engine 5176, respond." or "St. Helena, Engine 1375 responding."
Enroute	Normally used by administrative or staff personnel to designate destinations. Enroute is NOT a substitute for responding. Example: "Redding, Chief 2400 enroute"
In-quarters, with Station Name or Number	Example: "Morgan Hill, Engine 4577 in-quarters, Sunol."
Uncovered	Indicates a unit is not in-service, because there are no personnel to operate it.
Out-Of-Service	Indicates a unit is mechanically out of service. Example: "Auburn, transport 2341, out of service." Note, when repairs have been completed the following phrase should be used: "Auburn transport 2341, back in service, available."
In-Service	This means that the unit is operating, not in response to a dispatch. Example: "Fortuna, Engine 1283, in-service, fire prevention inspections."
Repeat	Self-explanatory
Weather	Self-explanatory

ICS CLEAR TEXT GUIDE

Return to	Normally used by communications center to direct units that are available to a station or other location.
What is your Location?	Self-explanatory
Call ____ by Phone	Self-explanatory
Disregard Last Message	Self-explanatory
Stand-By	Self-explanatory
Vehicle Registration Check	Self-explanatory
Is ____ Available for a Phone Call?	Self-explanatory
At Scene	Used when Units arrive at the scene of an incident. Example: "Perris, Engine 6183, at scene."
Available at Residence	Used by administrative or staff personnel to indicate they are available and on-call at their residence.
Can Handle	Used with the amount of equipment needed to handle the incident. Example: "Susanville Battalion 2212, can handle with units not at scene."
Burning Operations	Self-explanatory
Report on Conditions	Self-explanatory
Fire under Control	Self-explanatory
Emergency Traffic Only	Radio users will confine all radio transmissions to an emergency in progress or a new incident. Radio traffic which includes status information such as responding, reports on conditions, at scene and available will be authorized during this period.
Emergency Traffic	Term used to gain control of radio frequency to report an emergency. All other radio users will refrain from using that frequency until cleared for use by the communications center.
Resume Normal Traffic	Self-explanatory

- The calling unit transmits its message.
- The called unit repeats it back as received.
- If the message was received correctly, the calling unit responds with an affirmative acknowledgement, otherwise responds “Negative” and repeats the message.

The International Phonetic Alphabet is another useful communications tool when alphabetic letters or the spelling of words must be transmitted. Its use is recommended for all public safety communications.

Incident Communications Plans

Communications is the nervous system of incident response. In emergency response, communications is critical and planning is the key to systems that are available, reliable, and adequate. Within Montana, mutual aid and common frequencies are a resource whose use can be tailored for specific situations.

In principle, the structure of a communications system reflects the organizational structure of the agency or incident it serves. In practice, however, the reverse is too often true: The organizational structure (especially in emergencies) is molded by the available or adopted communications methods.

The National Interagency Incident Management System (NIIMS) Incident Command System (ICS) is recognized as providing a superior command structure for emergency response. It also provides a predictable organizational structure for communications planning. This manual adopts ICS conventions and the extended plans offered here reflect ICS structure.

Preplanning, basic interagency operations, and inter-discipline operations are discussed below.

1. PREPLANNING

A plan for emergency response communications should begin with an inventory of available resources combined with an analysis of likely classes of emergencies. Resources could include everything from paging receivers to mobile relays, from telephone handsets to central office switches. As a practical matter, an inventory will best serve the agency if it not only looks at the individual pieces of hardware, but also at how that hardware is used as part of a system. In this manner, redundancies are highlighted and risky dependencies are exposed.

Identification of outside equipment and services is equally important. Agencies within a given geographical area might form cooperative agreements to share resources when one has emergency needs. Similar agreements may be made with others outside the area in case a disaster overwhelms resources of all agencies within it.

While public safety agencies often rely on general mutual aid agreements with other jurisdictions for such instances, specific communications preplanning will help avoid problems.

Careful attention should be given to equipment and services from the private sector. Private communications companies may be able to provide resources on a contingency basis and thus spare agencies the cost of maintaining radio caches, systems, etc. Additionally, private mobile radio, radio telephone, radio common carrier, and cellular telephone systems abound in Montana and could prove to be invaluable resources during an emergency.

Cellular telephones are increasingly popular on emergency scenes. They offer the flexibility of wireless communications and person-to-person capabilities of telephone, providing instant access to the switched telephone network where service is available. Responders are relying on cellular for logistics and planning traffic from the scene to outside locations, particularly in large incidents. They compete for access to the systems with other cellular users, though, and are not generally given priority. Cellular service may be severely limited or unavailable during incidents when the public is heavily using cellular, such as the Oakland Hills fire of 1991.

An agency's jurisdiction and responsibilities affect its communications requirements and obviously determine what types of emergencies it might face. If as part of a preplanning process an agency can categorize types of emergencies based on projected communications needs, resource utilization can be simplified.

For example, one particular class of emergency may call for a supply of short range portable, while another may require multiple channels of communications to an Emergency Operations Center, possibly best provided by telephone. A contained hazardous materials spill might fall into the first class with primarily short range needs; a remote hostage incident might fall into the second with a greater need for the security, direct connections, flexibility, and range that telephone can provide.

One class of emergency that requires special attention is the failure of communications systems, themselves. An unexpected side effect of the February 1989 train wreck and explosion in Helena was the failure of a number of primary mobile relays serving the affected area. Emergency response efforts were complicated and no alternative, such as a portable repeater, was available. While all contingencies cannot be anticipated, redundancies in communications systems can be worth the cost.

A needs analysis provides a basis for decisions about the adequacy of existing resources, the requirements for outside resources, and most importantly, about the transition point from normal, everyday emergency operations to special equipment, networks, and procedures. Unfortunately, the failure to recognize that need for transition, especially in command and communications, often turns emergencies into disasters.

Preplanning is necessary for informed decisions and orderly transitions.

2. BASIC INTERAGENCY OPERATIONS

Basic interagency operations are simplified by the existence of mutual aid and common radio frequencies. For the vast majority of instances, a single frequency in common between a couple agencies provides all the communications interoperability needed. And most of the communications in those instances are between units of similar function - e.g. deputy sheriff to highway patrol officer, rural firefighter to city firefighter. This manual will refer to radio contacts between different public safety services as inter-discipline communications, which are implicitly interagency by nature. They are discussed in the next section.

The incident communications plan for basic (or tactical) interagency operations is simply the designated mutual aid frequency for the involved service.

Three frequencies form the core mutual aid resources for tactical use within their respective disciplines. They are:

SILVER - **State Law Enforcement Mutual Aid**

RED - **State Fire Mutual Aid**

TAN - **Statewide Regional Hospital to Ambulance**

While the **TAN** channel is primarily intended for regional hospital to ambulance communications, its inclusion here is to establish it secondarily as a tactical channel as it will be used by EMS in extended incidents.

One other frequency has been commonly agreed upon for tactical use within search and rescue, but has not been licensed statewide. It is a common channel as defined at the beginning of this manual. It is:

PURPLE - **Statewide Search and Rescue**

3. INTER DISCIPLINE OPERATIONS

One frequency has been licensed statewide for inter-discipline use and is the most widely spread among public safety agencies and emergency responders. It is intended as the primary communications channel between different services. It is:

GOLD - **State Common Mutual Aid**

All Montana public safety radio users should have access to the **GOLD** frequency.

The incident communications plan for a basic inter-discipline operation would include only one channel: **GOLD**.

For example, during a traffic accident response it may appear as shown in Figure 1 (Right)

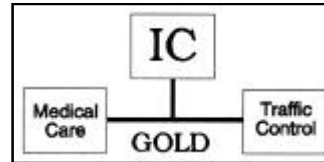


FIGURE 1

A more complex operation may have multiple functions within various public safety services and so other service-specific frequencies would begin to be used. A plan may look as depicted in Figure 2 (Below):

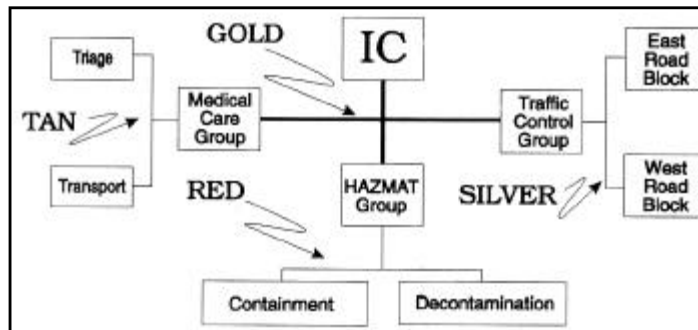


FIGURE 2

Note that the GOLD frequency is reserved for inter-discipline use.

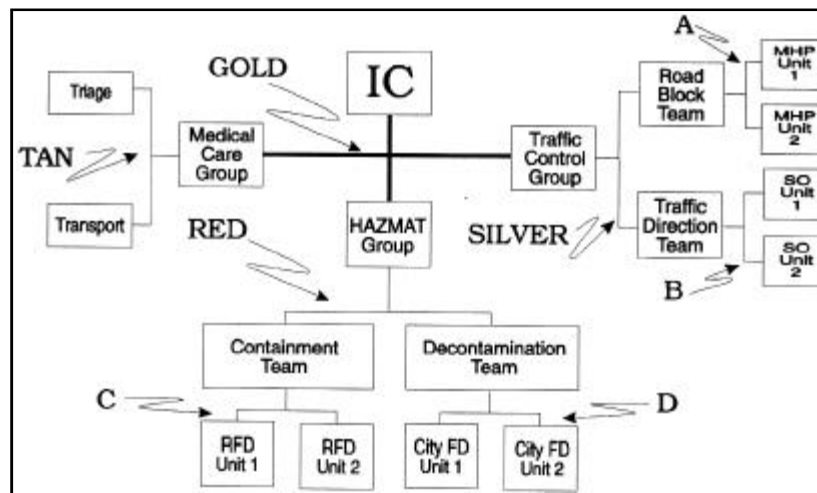


FIGURE 3

Appendix A of this manual contains sample ICS Form 205's, Incident Radio Communications Plan. Sample Plan 'A' describes the radio channel utilization depicted in Figure 3 on page 12.

4. EXTENDED INCIDENTS

A more complex communications plan may be needed when multiple units within an agency respond to a multi-agency, multi-discipline incident. Such cases add at least one more level to the command structure and this should be reflected in the plan. Figure 3 depicts a recommended plan.

Sample Plan 'B' in Appendix A describes the radio channel utilization depicted above.

Note that the **GOLD** channel is still reserved for the first inter-discipline level of communications and the **RED**, **SILVER**, and **TAN** channels are still used at the first interagency level within a discipline.

Channels A, B, C, and D in Figure 3 represent the agencies' own working frequencies. Subsequent parts of this manual expand on the separate communications plans of law enforcement, fire, EMS, DES, and search and rescue.

See Part IV, "Emergency Medical Services", for EMS dispatch and paging frequency use details.

The most complex plan to be presented here is one where the magnitude of response would cause the incident commander to give up direct management of operational resources and divide operations from other incident management. In such a case, the operations section would continue using a communications net similar to that described above with minor additions for an extended command structure and the addition of a command/control net above.

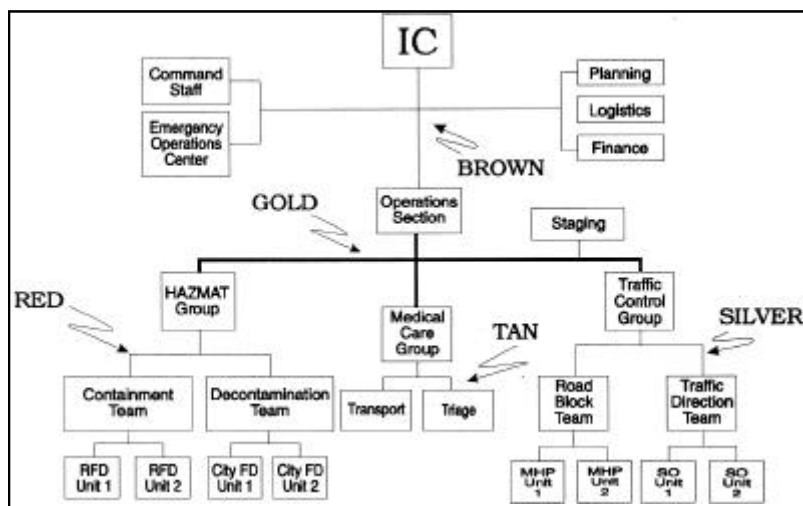


FIGURE 4

Sample Plan 'C' in Appendix A describes the radio channel utilization depicted on the previous page (Figure 4).

The **BROWN** frequency (State Direction & Control) has been appropriately used here for the command/control function above field mutual aid resources.

Two principles span these plans:

1. Frequencies assigned for basic interagency communications remain at the first interagency level from the bottom (**RED**, **SILVER**, and **TAN** in these examples).

2. The primary inter-discipline frequency (**GOLD**) remains at the first inter-discipline level of communications.

Base Station Use of Mutual Aid and Common Frequencies

Eight Montana mutual aid frequencies can be installed in base stations:

GOLD - The State Common Mutual Aid frequency may be licensed by public safety agencies eligible under FCC §90.17 as local government entities for installation in base stations. It must be licensed with the FCC by the agency and is restricted to secondary use (mobiles on this frequency being considered primary by the FCC). Base stations will be limited to 100 watts of nominal power and antennas to 20 feet or less in height above ground or an existing building.

MAROON - The State Fire Command and Control frequency may be licensed by fire service agencies for base station installation as provided by the Montana Mutual Aid Radio, Fire Frequencies, Policies and Procedures (Appendix K)

BLUE - The National Law Enforcement Emergency frequency may be installed in base stations by law enforcement agencies through authorization by the Montana Department of Administration, as provided by the Montana Mutual Aid Radio, Law Enforcement Frequencies, Policies and Procedures (Appendix J)

SILVER - The State Law Enforcement Mutual Aid frequency may be licensed by law enforcement agencies for base station installation as provided by the Montana Mutual Aid Radio, Law Enforcement Frequencies, Policies and Procedures (Appendix J)

WHITE, TAN, GRAY, and PINK - The State EMS frequencies may be licensed as provided by the Montana EMS Communications Plan (See Part IV, "Emergency Medical Services", Section 3).

Other Montana common frequencies can be installed in base stations, as well:

BROWN - The State DES Direction and Control frequency may be licensed as provided by the Montana Mutual Aid Radio, DES Direction and Control Frequency Plan (Appendix H).

VIOLET and **PURPLE** - The National and State Search and Rescue frequencies may be licensed as provided by the Montana Mutual Aid Radio, Search and Rescue Frequencies Plan (Appendix I).

Repeater Use of Mutual Aid and Common Frequencies

One mutual aid frequency, paired with a control, can be installed in mobile relays:

RUBY - The State Fire Repeater frequency may be licensed by fire service agencies for interagency communications as provided by the Montana Mutual Aid Radio, Fire Frequencies, Policies and Procedures (Appendix K) **GARNET** has been designated as the State Fire Repeater Control frequency; it is not available for permanent licensure in fixed base or control stations.

Part II

Law Enforcement

Part II - Law Enforcement

Overview

Appendix J contains the official policies and procedures for Montana law enforcement mutual aid frequencies. Oversight, eligibility, licensing and authorization, operational requirements, and discipline are covered in the formal document. The following discussion expands on the intent and practical application of law enforcement mutual aid radio.

Mutual aid radio planning for law enforcement must recognize the extensive use of closed systems while accommodating interagency communications needs. The transition from VHF-low band to VHF-high band in law enforcement over the past decade has resulted in greater flexibility and control over system coverage previously unavailable. It has also required that agencies coordinate their communications carefully with other public safety agencies.

Law enforcement is typically the center of public safety response in Montana and has found it necessary to allow other response agencies access to its systems for interoperability. Mutual aid radio can help provide communications between different jurisdictions, types of responders, and levels of government. It cannot, however, replace standard, “private” channels for common operational needs.

For example, many county sheriffs work closely and regularly with city police within their jurisdictions. Sharing of their respective systems may be required for adequate coverage and accessibility. Mutual aid channels should be used to supplement these common operations, allow access for special incidents, and provide a critical backup.

Dispatch operations are appropriately conducted on “private” channels, not mutual aid. Only the Montana EMS Frequencies Plan (Appendix G) provides shared frequencies for dispatch and paging. If an agency or organization is regularly dispatched by a communications center, then a non-mutual aid channel should be available for this purpose. Although communications between a center and responders may be appropriately channeled to mutual aid frequencies during response, initial dispatch is not.

Montana’s mutual aid radio users are asked to conserve this resource to make it most available when most needed. Two classes of mutual aid traffic are considered here for law enforcement: emergency and administrative.

The **BLUE** channel is for emergency communications and initial contact on more

routine matters. Short, infrequent transmissions make it most available for sudden emergency traffic. It must be monitored widely to be of most value.

The **SILVER** channel is for dispatch-to-dispatch communications and tactical operations. Administrative traffic is appropriately carried here unless preempted by a higher priority need. Priority use levels are covered on Page 2, above.

The **BLACK** channel, a new addition in 1993, is for coordination of law enforcement tactical teams. It is not available for base station use and is intended primarily for portable-to-portable communications. Mutual aid users must avoid interference with existing licensees in Drummond and Judith Basin County.

The **GOLD** channel is for inter-discipline communications (law enforcement-fire, law enforcement-highway department, etc.) It is used for both emergency and administrative (non-emergency) traffic, subject to priority use levels.

The **BLUE** and **SILVER** channels are law enforcement frequencies. The only non-law enforcement users allowed access are ambulances and public bus services on **BLUE** for contact with law enforcement, only. These two groups were provided with special access because they frequently cross jurisdictional boundaries and may need contact with a variety of law enforcement, particularly dispatch centers. The **BLUE** channel is intended for placement in all law enforcement base stations and so is the most likely resource for their emergency needs.

Emergency Communications

The **BLUE** channel (National Law Enforcement Emergency) is the primary channel for law enforcement interagency emergency communications. In instances where continued or tactical interagency communications are needed at an incident, initial contact may be made on the **BLUE** channel and responders instructed to move to the **SILVER** channel.

For example, at a vehicular accident scene **BLUE** could be used to hail other law enforcement responders and direct them to **SILVER** for continued operations.

Emergency operations may be conducted on the **BLUE** channel, if necessary, but an attempt should be made to off-load it as much as possible for other sudden emergencies. The **BLACK** channel is only for tactical team operations; other use is strictly prohibited.

Administrative Communications

The **SILVER** channel is established as the primary frequency for law enforcement interagency administrative communications.

1. ITINERANT TRAFFIC

Itinerant traffic such as between a prisoner transport vehicle and a communications center enroute should be carried on the **SILVER** channel. If necessary, initial contact may be made on the **BLUE** channel, but should be transferred as soon as possible to **SILVER** where administrative and tactical traffic is appropriate.

2. POINT-TO-POINT

The **SILVER** channel may also be used for point-to-point (base-to-base) communications. FCC §90.417 and 90.419 authorize interstation communications between different licensees “when the communications involved relate directly to the imminent safety of life or property,” on a secondary basis to base-mobile or mobile-mobile operations. This applies to all fixed stations on public safety frequencies commonly used in Montana, not just mutual aid.

Agencies must license their own base stations on the **SILVER** channel. The State of Montana maintains a statewide mobile license for this frequency and can directly authorize mobile use. No authorization by agreement is available for base station installation. Licensure by agencies is subject to coordination by the Montana Frequency Advisory Committee (of APCO) and is contingent upon prior installation of a **BLUE** base station.

As coordinator of police and local government frequencies in the state, the Montana Frequency Advisory Committee (MFAC) may recommend changes to limit range or harmful interference potential. A law enforcement mutual aid radio oversight council to the Department of Administration will arbitrate if MFAC and the applicant agency cannot find a mutually acceptable solution.

No special technical restrictions are established for **SILVER** base stations, but agencies making application should design their systems to minimize nuisance interference. Subaudible tone selection of receivers is not allowed for most mutual aid and is discouraged for common frequencies. Toning reduces interoperability and negates much of the rationale behind mutual aid.

Montana Law Enforcement Mutual Aid Frequency Base Station DTMF Plan

Suggested codes consist of three digits, the first two being the county number as used on vehicle license plates and the last digit being a intra-county selector. The last digit is also used for group call selection. Agencies employing this form of muting should allow receiver selection by their individual, county all-call, regional all-call, and state all-call codes. Leading zeroes (0) must be used.

000 - State All-Call	nn1,nn2	County Sheriff Codes
0nn - Regional All-Call	nn3,nn4,nn5	City Police Codes
nn0 - County All-Call	nn6	Fish, Wildlife, and Parks
	nn7	Montana Highway Patrol

Where 'nn' is the two digit county number (e.g. '01' for Silver Bow, '32' for Stillwater). Regional codes will be issued as requested by the Department of Administration. Agencies are asked to request assignment of regional codes as needed to guarantee a common plan across the state. Codes in use will be published by the Department of Administration.

A DTMF (dual-tone/multiple frequency) plan has been adopted for **SILVER** base stations to reduce extraneous traffic in communications centers that wish to use it. DTMF encoding provides some of the protection of subaudible toning without locking out all units lacking the key.

Incident Communications Plans

The incident communications planning discussed here only addresses law enforcement and does not attempt to cover all the resources available within any given jurisdiction. More general plans for other public safety services are covered in Part I, "General Information".

1. BASIC INTER-AGENCY OPERATIONS

Basic interagency law enforcement operations are conducted on the **SILVER** channel. As noted above, use of the **BLUE** channel should be limited to interagency emergency and base-mobile communications. It may be used for initial contact on non-emergency matters, but traffic should be switched as soon as possible to one of the tactical mutual aid (**SILVER**, usually, for law enforcement) or local common coordination channels, if available.

While the **GOLD** channel (State Common Mutual Aid) has been used a great deal in the past for law enforcement - to - law enforcement traffic, it should be reserved for inter-discipline communications where it is likely the only shared frequency. Ambulances and public bus service providers have been given access to the **BLUE** channel for emergency contacts with law enforcement base stations, but are expected to use the **GOLD** channel otherwise.

A basic communications plan for law enforcement would have agencies using their own channel(s) between their own units, the **SILVER** channel for contact between like units (mobile-mobile, base-base), the **BLUE** channel for interagency base-mobile contacts, and the **GOLD** channel for inter-discipline mobile-mobile communications. Graphically, it may be depicted as follows for the mutual aid channels:

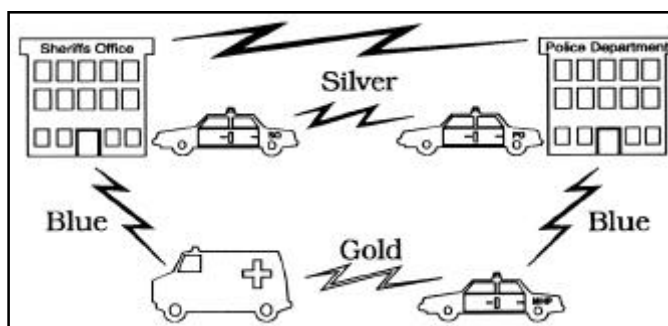


FIGURE 5

The agencies' own communications channels are not diagrammed here and some complementary lines (e.g. ambulance to sheriff's office mobile) are left out for the sake of clarity.

In this example, a bus could be substituted for the ambulance since both have access to **BLUE**. Other public safety responders who do not have access to the **BLUE** channel would still contact law enforcement mobile units on **GOLD**.

The remainder of the plans discussed here closely follow Incident Command System (ICS) structure. ICS is an effective tool for the management of emergency operations. It uses concepts of common terminology, modular organization, integrated communications, unified command structure, and manageable span-of-control, among others, all of which are keys to successful operations. Even in simple incidents, ICS can be put to work.

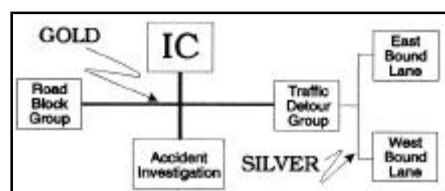


FIGURE 7

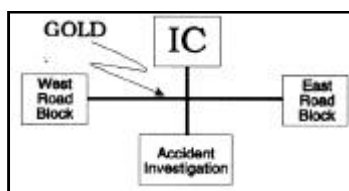


FIGURE 6

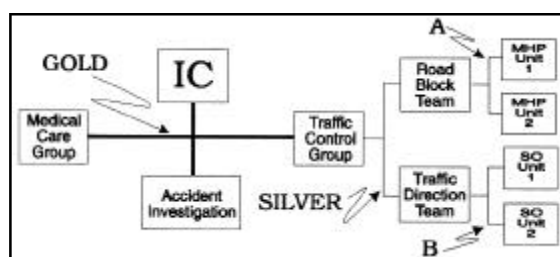


FIGURE 8

When an incident commander (IC) is designated during an event or operation, it is useful to have a separate net for command communications. This net would be used for direct control of operational elements during a simple incident. For an example, see Figure 6.

The **SILVER** channel could be used for the command net during purely law enforcement operations, but use of the **GOLD** channel will simplify expansion of a communications plan in the likely event that other types of public safety services are needed. **SILVER** could be retained for interagency tactical communications, such as in Figure 7.

When multiple units of an agency are involved, one of that agency's working channels becomes (or remains) its tactical channel. For example, see Figure 8 where A and B are the agencies' own working channels.

A simple incident where a single ambulance or highways sander, say, is also involved is easily handled by placing it on the command net (**GOLD**). If the situation expands much beyond that, a more complex plan is needed.

2. EXTENDED INCIDENTS

Extended incidents require both more formal communications plans and a broader network to cover a variety of response agencies. No mutual aid radio plan will be

able to provide all the communications necessary in a large incident where police, fire, EMS, search and rescue, and road maintenance workers among others may converge. Communications preplanning, taking into account all available resources, is essential for adequate response to such emergencies. Through this process, a formal plan can be developed that puts mutual aid radio to best use.

A generalized mutual aid plan is covered in Part I, "General Information" above. It establishes the **SILVER** channel for the first level of interagency law enforcement communications in both basic and extended incidents. In an incident command system, the **GOLD** channel is used at the highest operational level. In many cases it would be used by the incident commander (IC) to direct the various types of resources (fire, EMS, law enforcement, etc.) that respond.

When an extended law enforcement command net is needed as an incident grows, the **BLUE** channel is inserted above **SILVER**,

with the latter being retained at the first interagency communications level. For example, the previous plan could be modified as below, focusing on law enforcement and excluding the individual units (Figure 9).

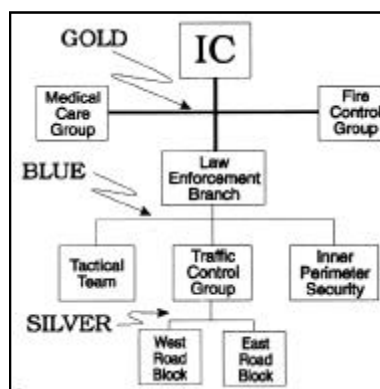


FIGURE 9

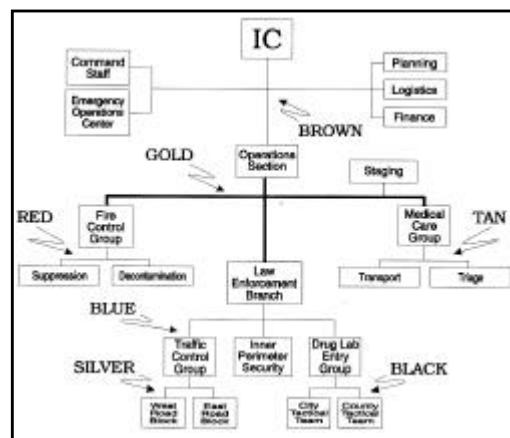


FIGURE 10

As an incident becomes more complex, operations are likely to be split from other command functions and an operations section chief assigned. The **GOLD** channel would continue to serve as the primary inter-discipline command net, while a new frequency would be assigned for incident command communications between the command staff and each functional section chief. The **BROWN** channel (State DES Direction and Control) would be appropriately used.

A large-scale incident communications plan may appear as depicted to the right (Figure 10), with emphasis on the law enforcement structure.

The need to incorporate individual agencies' working frequencies into these plans cannot be overstated. Incidents regularly occur where direct base-mobile communications are impossible and mobile relay (repeater) systems are required. Mutual aid frequencies are generally unavailable for use in repeaters, so such access will be through systems and frequencies maintained by the involved agencies.

Provisions should be made to give the various types of responders within a jurisdiction access to the wide-area networks covering the jurisdiction for maximum coverage and flexibility in formulating a communications plan.

Part III

Fire

Part III - Fire

Overview

Appendix K contains the official policies and procedures for Montana fire mutual aid frequencies. Oversight, eligibility, licensing and authorization, operational requirements, and discipline are covered in the formal document. This section expands on the intent and practical application of fire mutual aid radio.

Montana has nearly 400 fire service entities - more different emergency response organizations than law enforcement, EMS, and search and rescue combined. Most of these fire services have one or more radio frequencies licensed for their own use within their own jurisdictions. Many also have access to local coordination radio systems, often using mobile relays (repeaters). Mutual aid and common frequency use can supplement locally licensed systems and provide much needed communications interoperability.

The FCC has allocated 22 frequencies within the VHF-high band for fire base/mobile systems and another six for mobile-only use. Three of the base/mobile frequencies are limited to inter-system use and have been adopted along with one of the mobile-only frequencies for mutual aid use in Montana. In 1993, a fourth Fire Service frequency was adopted as the output for mutual aid fire repeaters. This frequency, which was previously restricted to low-power applications, has been paired with another from the Forestry Conservation Radio Service. Montana's first mutual aid repeater frequencies are discussed further in this section.

1. MUTUAL AID FREQUENCIES

The Montana fire mutual aid frequencies are:

RED	- 154.070 MHz	- State Fire Mutual Aid
MAROON	- 154.280	- St. Fire Cmnd and Control
CORAL	- 154.265	- State Fire Ground #1
SCARLET	- 154.295	- State Fire Ground #2
RUBY	- 153.830	- State Fire Repeater
GARNET	- 159.345	- State Fire Repeater Control

The **RED** channel is a mobile-only frequency and is the primary channel for interagency communications. In many instances this channel will provide all the interoperability needed between different organizations for communications.

The **MAROON** channel has been established for higher level command and control. It is available for installation in base stations and mobiles. This channel is to be used for directing diverse resources to large scale incidents as well as for on-scene command when not tied up with base-base traffic.

Fire

The **CORAL** and **SCARLET** channels are intended to both be used as additional fire ground frequencies. The Montana Fire Frequencies Plan (Appendix F) prohibits permanent base stations on these frequencies. An agency may obtain a temporary base station license, covering a specific area, to allow establishment of a base on these frequencies for special incidents. FCC regulations require that any station intended to be operated for a year or more be permanently licensed at the specific site; the **CORAL** and **SCARLET** frequencies cannot be so licensed.

The **RUBY** and **GARNET** channels were licensed in 1993 for mutual aid. They are paired for mobile relay use, with 153.830 MHz as the output frequency of the relay (or fixed base under talk-around use) and 159.345 MHz as the control or input frequency to the relay. The **RUBY** frequency can be licensed by individual agencies or organizations, but **GARNET** is available only by agreement with the State of Montana.

A fifth mutual aid frequency is available for fire service use: **GOLD** (State Common Mutual Aid). This channel is available to all Montana public safety and emergency responders. It is designated for inter-discipline (fire-EMS, EMS-search and rescue, etc.) communications.

The State of Montana maintains statewide mobile licenses for all mutual aid frequencies. **MAROON** and **RUBY** are licensed statewide for temporary base use, as are **RUBY** and **GARNET** for temporary mobile relay and control station use, respectively. The Department of Administration can provide mobile use authorizations to fire service entities already licensed in the fire or local government FCC services. It can also provide authorization to establish temporary base, mobile relay, and control stations for special incidents. Part VIII, "Management and Administration" covers details on obtaining these authorizations.

It should be noted that the **MAROON** channel is commonly used for fire mutual aid by our surrounding states and so is an additionally valuable resource.

2. COMMON FREQUENCIES

Additional frequencies used by some large fire services are available through interagency agreement or, in some cases, by direct licensing.

The Department of State Lands common (**YELLOW** - 151.220 MHz) and the U.S. Forest Service common (**GREEN** - 171.475 MHz) frequencies can be of great value and may be used through agreement with those agencies.

The State DES Direction and Control (**BROWN** - 155.820 MHz), the National Search and Rescue (**VIOLET** - 155.160 MHz), and the State Search and Rescue (**PURPLE** - 155.220 MHz) frequencies are available for licensing by those qualifying within the Local Government and Special Emergency services, respectively. They each have specific functions in Montana's public safety radio plans and are not for general fire use, but may be valuable to have.

Many areas of the state have their own “common” channels for coordination of different resource groups, sometimes just fire organizations, sometimes all emergency responders. These channels should be used fully with provisions made for communications to outside resources, generally through use of mutual aid channels. Mutual aid radio should not be relied on in place of adequate planning and utilization of local resources.

Incident Communications Plans

At the simplest incident, command/control communications are indistinguishable from tactical communications. The incident commander in such a case is directing resources (command/control) right down to the smallest working (tactical) level. Mutual aid radio is rarely needed in such minor incidents since one working frequency is generally adequate.

A distinction between tactical and command/control communications needs to be made as an incident grows and one gains the potential of interfering with the other. More than one radio frequency is needed to establish separate nets unless a medium other than radio is used for one or the other.

Any public safety entity, fire service or otherwise, should have an adequate number of frequencies available to itself to conduct operations not requiring interagency response. In other words, if a given fire organization needs multiple, separate nets for internal command/control and tactical communications, it should have enough frequencies available to itself to satisfy its own needs. Mutual aid radio cannot provide all the frequency resources for public safety response; it is intended for interagency communications. The best use of locally licensed frequencies must be made for the mutual aid frequencies to be available when they are the only means of communications.

The **RED** channel is Montana’s primary fire mutual aid frequency. For the simplest mutual aid incidents, it alone may be adequate for interagency communications. Users should be aware that our surrounding states have different uses for this frequency.

The FCC has established 154.265, 154.280, and 154.285 MHz (**CORAL**, **MAROON**, and **SCARLET**) as inter-system fire frequencies, meaning they may only be used for communicating between different fire radio systems. In Montana, the **CORAL** and **SCARLET** channels have been adopted for fire ground, or essentially tactical, use between different agencies. The **MAROON** channel has been adopted for interagency command/control communications, with provisions made for temporary and permanent base station licensing.

Fire communications plans offered here make use of these frequencies as intended by the FCC and the Montana Fire Frequencies Plan (Appendix F).

1. BASIC INTERAGENCY OPERATIONS

The Montana fire service makes use of the Incident Command System, most commonly National Interagency Incident Management System (NIIMS) based ICS. The communications plan examples presented below are based on NIIMS ICS and recognize that few incidents require full expansion of the command hierarchy. In the mutual aid communications arena, shared channels are intended for interagency traffic, so these plans reflect such use. For the sake of clarity, command span-of-control is abbreviated in some examples, as is organizational structure. Additional subdivisions may be assumed to exist below unexpanded sections, branches, divisions, groups, and task forces.

The most basic communications plan for an interagency fire incident would use the **RED** channel for interagency traffic. Each organization would use its own channel for internal communications. It may appear as depicted in Figure 11.

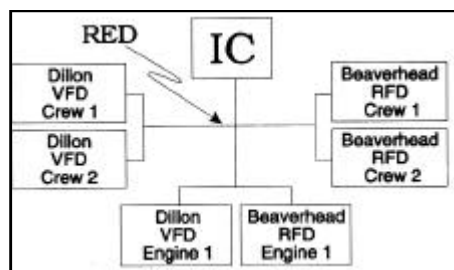


FIGURE 11

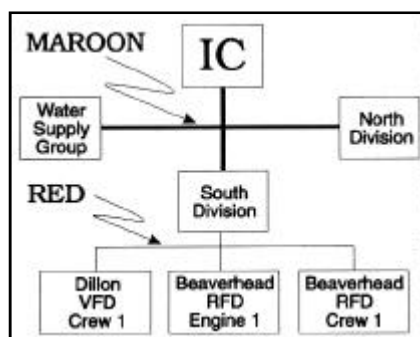


FIGURE 12

Although not shown here, the **GOLD** channel may be appropriately used for check-in directly with the incident commander.

A slightly more complex plan is needed when interagency command must be separated from interagency tactical communications. Figure 12 shows a plan with a command net on **MAROON** between the incident command, a functional element (group), and geographic elements (divisions).

The **MAROON** channel is available for base station installation and is currently used by some interagency communications centers. It would appropriately be used here between the incident command and communications center for ordering resources in the initial stages of a response.

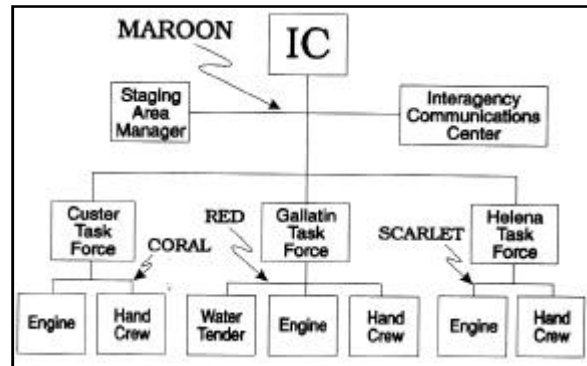


FIGURE 13

The above example is simplified by considering individual resources provided by separate fire service agencies. The plans assume that further organizational subdivisions may take place within the agencies and their own frequencies will be useable for communications. Often times, though, strike teams are formed from different agencies and the “private” frequencies of each agency are useless within the group. Mutual aid frequencies are appropriate for this use, though there are serious limitations because of the number available.

Considering an incident involving only fire responders, a simple two-level command structure (with the IC managing operations) and a strike team approach, a communications plan may look as depicted in Figure 13.

The **RED**, **CORAL**, and **SCARLET** frequencies are randomly assigned here for equivalent functions. No special order is followed, though **RED** should be geographically closest to powerful **MAROON** transmitters since the other two are adjacent channels to **MAROON** and may be subject to interference.

It would be risky, in a variation to the above plan, to reassign the **MAROON** channel to tactical use and to use, say, the **GOLD** channel for incident command.

First, **MAROON** is most likely to have base stations transmitting on it and thus interrupting operations. Command personnel will likely be in a better position both geographically and functionally to call ‘emergency traffic only’ to get critical communications across; field personnel will more likely be using low powered transceivers and thus less vocal victims of interference. Second, if the incident escalates into a multi-discipline operation, the **GOLD** channel will be needed at the highest operational level and fire command would need to be moved to some other frequency. This latter likelihood would be further complicated by the fact that the **MAROON** channel was assigned to tactical units; a switch to it as the command channel later in the incident could be problematic.

Fire

General mutual aid planning should take into account the likelihood of multi-agency strike teams being used. If it is likely, plans should be made to pool agencies' working frequencies for common use during situations as described above. The frequencies can be installed in radios of all cooperating agencies (as properly licensed) and a common channelization plan devised so "Channel 1", for example, is the same in all units.

2. EXTENDED INCIDENTS

Fire incidents have a high potential for becoming inter-disciplinary in nature, involving EMS and law enforcement among others. Extended incidents as they are discussed here are those which involve other types of public safety services. They require additional planning for communications. The **GOLD** channel is the primary means of radio communication between different public safety service types.

The simplest inter-discipline incident may be one where the incident commander is directly responsible for fire operations as well as coordinating EMS response. The IC would appropriately use the **GOLD** channel for communications with all tactical units.

As the situation becomes more complex, the incident commander is less responsible for fire interagency coordination and more responsible for inter-discipline coordination. A separate fire branch may be established and the communications plan extended smoothly, as in Figure 14.

When direct operations responsibility is moved away from the incident commander and an operations section chief is instituted because of the incident complexity and scope, the communications plan can expand through use of the State DES Direction and Control (**BROWN**) channel. The most complex plan to be included here may appear as depicted in Figure 15 (next page).

3. GEOGRAPHICALLY EXTENDED INCIDENTS

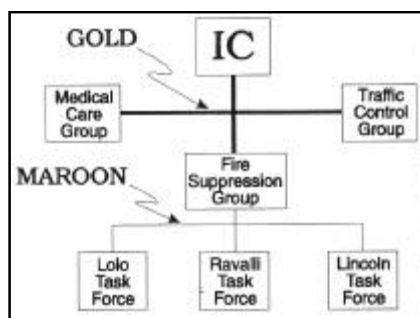


FIGURE 14

Geographically extended incidents are now better supported by mutual aid communications with the 1993 addition of two new frequencies for interagency fire repeaters. Mobile and portable radio coverage in Montana's rugged expanses has always been a challenge - particularly when strategically located repeaters are not available. In the past, no frequencies were available statewide for shared repeater use, but with the addition of **RUBY** and **GARNET**, mutual aid communications may be extended over greater distances.

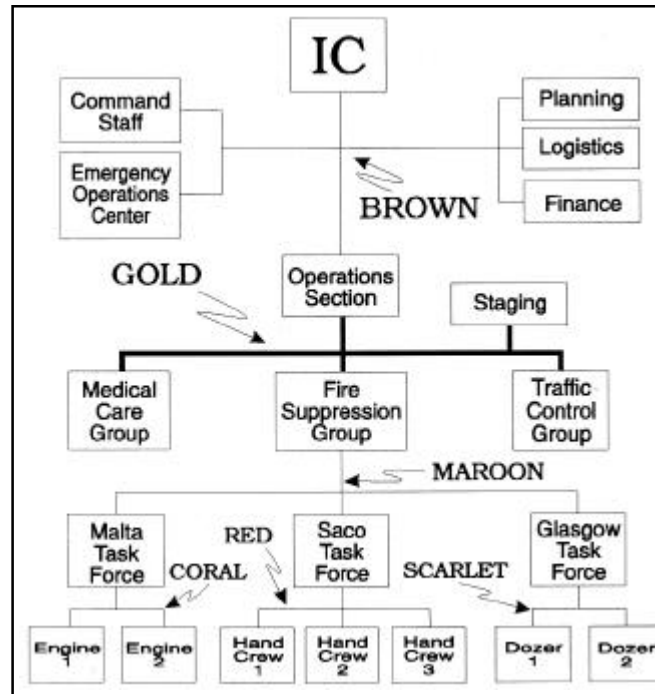


FIGURE 15

Repeaters not only offer greater mobile coverage, they also add complexities to communications plans and actual operations. Two frequencies are used per repeater channel and confusion often arises over which is the mobile transmit and which is the repeater transmit. Other problems arise when repeaters use subaudible tone or digitally-coded squelch as is required for **RUBY** repeaters to reduce interference. And because they are usually sited high on mountains to provide the best coverage, repeaters can also cause interference at greater distances.

RUBY repeaters are suitable for command or tactical communications, interagency and even inter-discipline. Users are strongly encouraged to study the restrictions on **RUBY** and **GARNET** explained in Appendix K of this manual and to further consult with their radio service providers before incorporating these new frequencies into their plans. Permanent repeaters must be licensed with the FCC by the user and authorization to use **GARNET**, the repeater control frequency, is only available through agreement with the State of Montana.

Fire

See Part VIII, “Management and Administration” for details on obtaining mutual aid frequency authorizations.

Part IV

Emergency

Medical Services

Part IV - Emergency Medical Services

Montana EMS Communications Plan

1. PURPOSE

The goals of Montana emergency medical services communications are to:

1. Provide for easy and prompt citizen access to emergency medical services, preferably through a coordinated public safety agency central dispatching system;
2. Assure coordination with the dispatch of other emergency services agencies;
3. Provide, throughout the state, excellent hospital to ambulance radio communications;
4. Provide, throughout the state, excellent communications among all emergency response agencies;
5. Provide for the medical control necessary for progression to advanced life support;
6. Allow for coordinated communications with other agencies in the event of a major EMS incident;
7. Be coordinated statewide to assure a good system with a minimum duplication of effort; and
8. Assure that an ambulance service or other emergency medical response agency can contact a 24-hour physician-staffed emergency department from anywhere in the state.

2. GENERAL BACKGROUND

In the early 1970's, the Department of Transportation, throughout its Highway Traffic Safety Emergency Medical Services standard (Standard 11), encouraged the establishment of hospital to ambulance service communications systems. With funding made available through Highway Traffic Safety, many ambulance services and hospitals in Montana were provided with two-way radio communications on VHF-high band frequencies.

Very quickly, the frequency 155.280 MHz became the "de facto" standard for ambulance to hospital communications in Montana with 155.340 MHz becoming a secondary channel. Radio paging of ambulance service crews became a more common method of alerting personnel - a particular advantage for rural, volunteer services. All systems used open squelch rather than tone-coded receiver selection. With the availability of new federal funding through the Department

of Health, Education, and Welfare, there was increased emphasis placed on the development of a coordinated, statewide EMS communications system. Montana Department of Administration Public Safety Radio Communications Program and the state Disaster and Emergency Services shared the services of a single communications planner.

In the early to mid-1970's, several statewide actions were taken:

1. The entire state EMS radio communications system was converted to a Dual-Tone/Multi-Frequency (DTMF) encoding and decoding system. Each hospital was assigned a unique number with the numbers and their assignments maintained by the Emergency Medical Services Bureau.
2. To assist with the conversion process and to assure uniformity throughout Montana, the EMS Bureau purchased DTMF encoders for all ambulance services and DTMF encoders/decoders for all hospitals. The list of DTMF codes is still maintained by the EMS Bureau.
3. With the purchase of considerable radio communications equipment through federal funding, there was an increased effort to coordinate the assignment of frequencies. Four EMS frequencies were incorporated in the Montana spectrum allocation: 155.280, 155.340, 155.325, and 155.385 MHz.

3. FREQUENCY USAGE

Montana's four EMS frequencies and their uses are:

- 155.280 MHz** Primary hospital to ambulance communications frequency for use in a local area. Paging is not allowed on this frequency. As a simple naming convention, this is designated the **WHITE** channel.
- 155.340 MHz** Regional hospital to ambulance communications frequency. To be used by an outlying ambulance when communicating with a regional medical control facility. This is designated the **TAN** channel.
- 155.325 MHz** Secondary Use: EMS interagency communications at an incident scene. Central region (2A & 2B) dispatch and paging frequency. This is used to communicate between the ambulance service or other EMS responding agency and dispatch. The FCC has issued a waiver allowing alerting of EMS personnel on this frequency in Montana. Only EMS personnel may be alerted on this frequency. This is designated the **GRAY** channel.
- Secondary Use: EMS interagency communications in the western and eastern regions at an extended (mass casualty) incident scene.

155.385 MHz Western and eastern region (1A, 1B, 3A, & 3B) dispatch and paging frequency. This is used to communicate between the ambulance service or other EMS responding agency and dispatch. The FCC has issued a waiver allowing alerting of EMS personnel on this frequency in Montana. Only EMS personnel may be alerted on this frequency. This is designated the **PINK** channel.

Secondary Use: EMS interagency communications in the central region at an extended (mass casualty) incident scene.

4. FREQUENCY AUTHORIZATION

The EMS frequencies can be licensed for base, base/mobile, or mobile only use by agencies or organizations qualifying as special emergency entities under FCC §90.35. All recognized emergency medical service providers in Montana qualify. Use is restricted to the classes of communications listed above.

The EMS Bureau maintains a statewide mobile-only license for the frequencies and can authorize mobile use to qualified entities unable to obtain a license themselves.

Part VIII, “Management and Administration”, of this manual contains further information on frequency use authorization by both license and interagency agreement, as well as contact information for the appropriate agencies.

5. RECOMMENDED CHANNEL CONFIGURATION

Radios purchased through federal funds were required to be compliant with this frequency allocation. To assure that channel numbers assigned to the frequencies in various EMS radios would be consistent, all federally purchased radios were required to have the frequencies in the following channel configuration:

Channel 1	155.280 MHz	Local Hospital to Ambulance
Channel 2	155.340	Regional Hospital to Ambulance
Channel 3	155.325	Central Region Dispatch & Paging
Channel 4	155.385	Western/Eastern Region Dispatch & Paging

This channel configuration is still recommended, but is not mandatory.

Administrative rules of Montana require that a ground ambulance have a VHF mobile radio, and an air ambulance have a VHF portable radio with a minimum frequency of 155.280 MHz (**WHITE**).

Effective January 1, 1996, each must have a minimum of:

- **Dual tone multi-frequency encoder**
- **Frequency 155.280 MHz (WHITE)**
- **Frequency 155.340 MHz (TAN)**
- **Frequency 155.325 MHz (GRAY)**
- **Frequency 155.385 MHz (PINK)**
- **Frequency 153.905 MHz (GOLD - State Common Mutual Aid)**

Non-transporting units must have the capability by January 1, 1996 of providing at least one radio at every emergency medical scene with a minimum of:

- **Frequency 155.280 MHz (WHITE)**
- **Frequency 155.340 MHz (TAN)**
- **Frequency 153.905 MHz (GOLD - State Common Mutual Aid)**

6. DTMF CODE ASSIGNMENT

The EMS Bureau has established and currently maintains a list of dual tone multi-frequency (DTMF) code assignments for base stations on the two ambulance-hospital frequencies (**WHITE** and **TAN**). Although codes have been assigned, there is no guarantee that the establishments listed below are using them or even the EMS frequencies; accuracy depends upon voluntary compliance. Requests for new assignments or reports of inaccuracies should be made to the EMS Bureau.

Montana DTMF Code Assignments

Area 1	City	DTMF Code
St. John's Lutheran Hospital	Libby	010
North Valley Hospital	Whitefish	020
Kalispell Regional Hospital	Kalispell	030
St. Joseph Hospital	Polson	040
St. Luke Community Hospital	Ronan	050
Clark Fork Valley Hospital	Plains	060
Holy Family Hospital	St. Ignatius	070
 Area 2	 City	 DTMF Code
Granite County Hospital	Phillipsburg	075
Communications Dispatch Center	Missoula	911
St. Patrick's Hospital	Missoula	078
Missoula Community Hospital	Missoula	079
Seeley Lake Clinic	Seeley Lake	080
Mineral County Hospital	Superior	081
Daly Memorial Hospital	Hamilton	082
Powell Co. Memorial Hospital	Deer Lodge	083
Missoula General Hospital	Missoula	084

Area 3	City	DTMF Code
Madison Valley Hospital	Ennis	183
St. James County Hospital	Butte	184
Silver Bow General Hospital	Butte	185
Community Hospital	Anaconda	186
Barrett Hospital	Dillon	187
Galen State Hospital	Galen	189
Ruby Valley Hospital	Sheridan	190
Warm Springs State Hospital	Warm Springs	191
Area 4	City	DTMF Code
Deaconess Hospital	Bozeman	258
Livingston Memorial Hospital	Livingston	259
Boulder Dispatch Center	Boulder	260
Broadwater Hospital	Townsend	262
Area 5	City	DTMF Code
Columbus Hospital	Great Falls	340
Deaconess Hospital	Great Falls	341
Fort Harrison V.A. Hospital	Helena	350
St. Peters Hospital	Helena	352
Helena 911 Center	Helena	353
Mountainview Memorial Hospital	White Sulphur Spr.	354
Memorial Hospital	Cut Bank	450
PHS Indian Hospital	Browning	451
Pondera County Hospital	Conrad	452
Teton Memorial Hospital	Choteau	453
Toole County Hospital	Shelby	454
Area 7	City	DTMF Code
Chouteau Co. District Hospital	Fort Benton	517
Northern Montana Hospital	Havre	518
Northern Montana Hospital Local	Havre	519
Rocky Boy Medical Center	Rocky Boy	520
Fort Belknap Medical Center	Fort Belknap	521
Liberty County Hospital	Chester	523
Big Sandy Medical Center	Big Sandy	524
Area 8	City	DTMF Code
Roundup Memorial Hospital	Roundup	592
Wheatland Memorial Hospital	Harlowton	593
Central Montana Hospital	Lewistown	594

Area 9	City	DTMF Code
Sweet Grass Community Hospital	Big Timber	670
Big Horn Community Memorial Hosp.	Hardin	671
PHS Indian Hospital	Crow Agency	672
Deaconess Hospital	Billings	673
St. Vincent's Hospital	Billings	674
Carbon County Memorial Hospital	Red Lodge	675
Stillwater Community Hospital	Columbus	676
Laurel Clinic	Laurel	678

Area 10	City	DTMF Code
Glendive Community Hospital	Glendive	850
McCone County Hospital	Circle	851
Garfield County Hospital	Jordan	852
Community Memorial Hospital	Sidney	853
Prairie Community Hospital	Terry	854

Area 11	City	DTMF Code
Roosevelt Memorial Hospital	Culbertson	925
Frances Mahone Deaconess Hospital	Glasgow	926
Phillips County Hospital Association	Malta	927
Sheridan Memorial Hospital	Plentywood	928
Poplar Community Hospital	Poplar	929
Daniels Memorial Hospital	Scobey	930
Trinity Hospital	Wolf Point	931

Incident Communications Plans

Emergency medical service providers rely on interagency communications more than any other type of public safety responder. Field responders communicate by radio with public safety officials at incident scenes, with various dispatch centers, and with hospitals. EMS led the way in Montana communications interoperability by early adoption of a common interagency plan and standardized use of VHF-high band frequencies over ten years ago.

The EMS Communications Plan presented above has developed over time to address needs of emergency medical service providers to communicate amongst themselves, hospitals, and dispatch points. Through the use of other mutual aid and common frequencies, inter-discipline (EMS-fire, EMS-law enforcement, etc.) communications can be equally well provided for. The general incident communications plans presented in Part I of this manual incorporate EMS and the frequencies available to it. The remainder of this section expands on those plans from an EMS perspective.

1. BASIC INTERAGENCY OPERATIONS

Emergency medical services typically work closely with their local public safety authorities and often have direct communications capabilities through use of local systems (repeaters, dispatch centers, etc.) When outside resources are needed or providers travel outside their own area, communications can be a problem unless mutual aid and common frequencies are used effectively. Their use can also reduce the number of frequencies needed to contact the variety of responders EMS works with. Four channels are useful for basic interagency operations:

The **GOLD** channel (State Common Mutual Aid) is the primary public safety interagency channel in Montana. It is available to any agency, organization, or individual with a legitimate public safety responsibility.

The **BLUE** channel (National Law Enforcement Emergency) has been made available for installation in EMS mobile radios by agreement with the State of Montana.

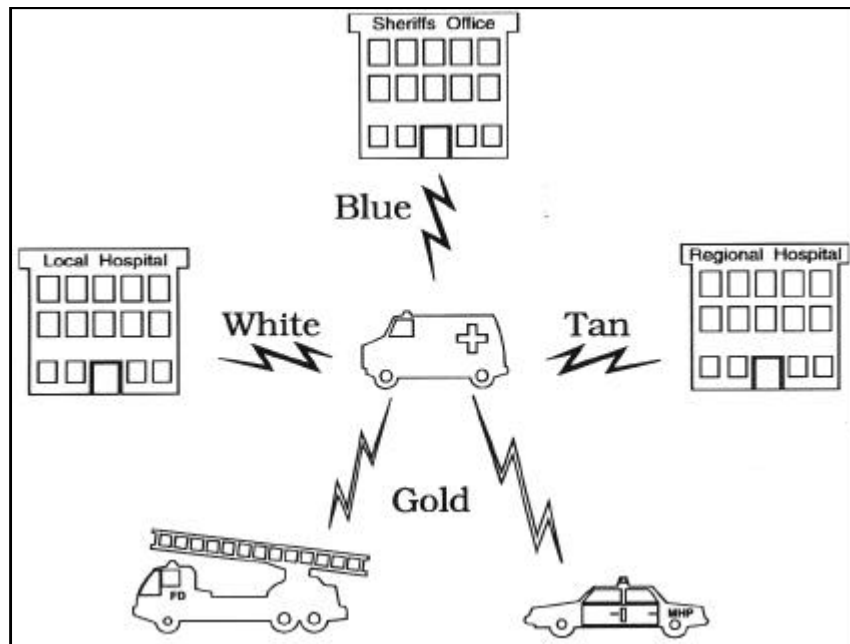


FIGURE 16

It is intended for emergency communications with law enforcement base stations and should not be used in place of the **GOLD** channel for mobile-mobile communications, nor for dispatch. It is of particular value to units traveling outside their regular response areas.

The **WHITE** channel is for ambulance-hospital communications and retains that use from routine emergencies through the largest incidents.

The **TAN** channel is designated as the ambulance-regional hospital channel and secondarily for EMS interagency communications (ambulance service to ambulance service, QRU, etc.) during larger incidents.

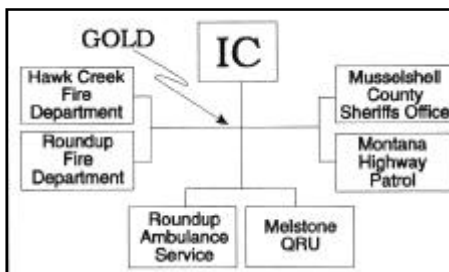


FIGURE 17

During a small-scale incident organized under ICS, the incident commander could use **GOLD** to manage multi-discipline resources. While it can be used between EMS units, care should be taken not to overload **GOLD** since it is the only mutual aid channel established for use between different public safety services.

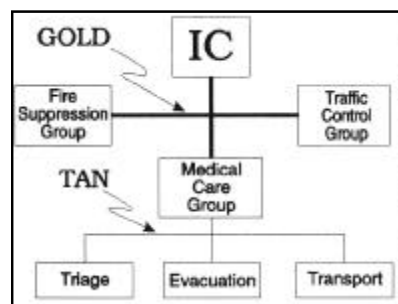


FIGURE 18

A communications plan may appear as depicted in Figure 17.

The vast majority of Montana interagency incidents could be handled with this simple communications plan. **GOLD** provides a link between all emergency responders.

2. EXTENDED INCIDENTS

Mass-casualty incidents bring tremendous demands for communications interoperability. EMS, fire, and law enforcement resources are usually called upon when they occur and each response group brings its own unique communications needs. The plans depicted below focus on the EMS side of such operations, with command span-of-control and organizational structure abbreviated in some examples for the sake of clarity. Additional subdivisions may be assumed to exist below unexpanded sections, branches, divisions, groups, and task forces.

As soon as field units are removed one level from the incident commander, a separate EMS tactical channel is called for. In Figure 18, **TAN** is assigned as such between the triage, evacuation, and transport functions of this incident.

During larger incidents, one more level of subdivision can be accommodated through use of the off-region dispatch and paging channel. For example, the **GRAY** channel could be used for EMS tactical communications in the western and eastern EMS regions (1A, 1B, 3A, & 3B) and **PINK** be used in the central region (2A & 2B). Since **GRAY** and **PINK** are normally used for dispatch and paging, the potential exists for interference, especially in areas near bordering regions. Users are asked to recognize this potential problem and work together during larger incidents to put these frequencies to best use.

The final EMS incident communications plan to be presented here makes use of two levels of communications. X represents the off-region dispatch and paging channel. As depicted in Figure 19 (Below), it is used to link different patient transport resources together and with the incident transport group supervisor.

Medical control communications have not been addressed in these plans, but care has been taken not to interfere with routine dispatch and local hospital-ambulance frequencies. As is commonly done during more routine emergencies, EMS units under an ICS communications plan would use **WHITE** for medical control at the local hospital.

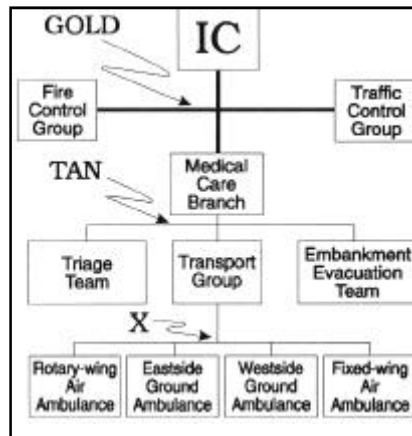


FIGURE 19

Part V

Disaster and

Emergency Services

Part V - Disaster and Emergency Services

The radio capabilities of our state and local disaster and emergency services (DES) offices play a critical role in Montana's public safety communications. In many ways, DES and civil defense professionals have been at the forefront of developing technologies that allow radio communications across great distances, often with minimal equipment. The practical uses of these technologies are often tested under the worst conditions, when people need to communicate most.

Two DES radio communications means are discussed here: the S.E.C.U.R.E. (State Emergency Capability Using Radio Effectively) Network and the State mutual aid and common frequencies.

Montana DES Communications

1. S.E.C.U.R.E. NETWORK

The State of Montana S.E.C.U.R.E. Network uses HF frequencies and consists of 27 base stations located at Army National Guard Armories throughout the state plus seven mobile units. The mobiles are to be rapidly deployed to any part of the state while the base stations provide direct and/or relayed communications to the State Emergency Operations Center (EOC) in Helena. All base station locations have emergency power.

The Disaster and Emergency Services Division of the Department of Military Affairs is the designated administrator of this radio network and is responsible for drills, exercises, and tests conducted at 0900 hours, local time every Tuesday.

2. STATE MUTUAL AID AND COMMON FREQUENCIES

Montana's disaster and emergency management officials can make good use of two VHF-high band public safety frequencies in carrying out their responsibilities. They are:

153.905 MHz - GOLD - State Common Mutual Aid

155.820 MHz - BROWN - State DES Direction and Control

(See Part I, "Color Names", for more information on color naming of frequencies.)

The **GOLD** channel is available for mobile (including portable) use through agreement with the Department of Administration, which holds a statewide license for it. It is also available for low-powered base station licensure directly with the FCC for those eligible in the Local Government Radio Service (FCC §90.19a).

Since all public safety providers can use this frequency, it is valuable to emergency managers who may need to contact a wide variety of responders. Base stations with local area coverage can be particularly valuable in support of an emergency operations center (EOC). Part I of this manual contains further information on using **GOLD** base stations.

The **BROWN** channel is available for mobile and/or base licensure directly with the FCC. It is not licensed statewide for access by agreement, so is not considered a mutual aid channel, proper. Each agency using the frequency must hold a license authorizing use and each base station must be specifically listed. A licensee can issue authorization to another agency for mobile use of the frequency for communications with itself, the licensee.

The **BROWN** channel is for emergency management communications by elected or appointed officials of the executive branch of government, emergency response agency department heads and supervisors, and other department heads who have specific emergency assignments. It is for communications essential to direction and control needs during a disaster or emergency situation.

Licensing Frequencies

Both the **GOLD** and **BROWN** frequencies are in the FCC Local Government Radio Service. The Association of Public-Safety Communications Officials (APCO) has been designated as coordinator for this service by the FCC. Applications for license are submitted to the APCO Automated Frequency Coordination office for processing before being sent to the FCC.

APCO uses local advisors in each state for much of the actual coordination work. The Montana Frequency Advisory Committee (MFAC) of the state APCO chapter approves applications forwarded to it from the national APCO office. MFAC also considers applications through a “pre-approval” process whereby it and the applicant can look for agreeable solutions to communications needs. Part VIII, “Management and Administration”, covers details of obtaining authorization on Montana’s mutual aid and common frequencies.

Part VI

Search and Rescue

Part VI - Search and Rescue

Under Montana law, sheriffs are responsible for the provision of search and rescue services within their respective counties. Most sheriffs departments in the state pass a large share of this responsibility on to private groups of volunteers. These groups, of which 50-60 identify themselves as search and/or rescue (SAR) organizations, rely on radio communications a great deal in rendering their life-saving skills. Often they make use of the sheriff's radio system and many hold their own licenses in the FCC Special Emergency Radio Service.

Search and rescue groups can use three mutual aid and common frequencies for communicating with other responders. They are:

153.905 MHz - GOLD - State Common Mutual Aid

155.160 MHz - VIOLET - National Search and Rescue

155.220 MHz - PURPLE - State Search and Rescue

See Part I, "Color Names", for more information on color naming of frequencies.

Search and rescue groups are eligible to enter into agreement with the State of Montana, Department of Administration, for use of the **GOLD** channel for communications with public safety radio users other than search and rescue. The **VIOLET** and **PURPLE** channels can be licensed directly with the FCC for communications with other SAR users. They are discussed further below.

Some SAR groups may be eligible for authorization by license or agreement to use EMS, fire, or law enforcement frequencies depending on their particular responsibilities. Generally speaking, though, they are limited by FCC definitions of eligibility for those services.

Common Frequency Use

As was mentioned in the first section of this manual, common frequencies are distinguished from mutual aid by the fact that the latter are licensed statewide by the State of Montana which then provides access by agreement. Common frequencies are available for licensing by each organization. Users must either be licensed for the common frequency or have an agreement authorizing communications on the frequency with a license holder, from the license holder.

SAR groups interested in using either the **PURPLE** or **VIOLET** channels are best advised to have their own license.

1. STATE SEARCH AND RESCUE

The frequency 155.220 MHz has been recognized for almost ten years as the primary common channel for communications between SAR groups in Montana. When it doesn't interfere with interagency communications, it may be used by a group for communications between its own responders. The section on incident communications plans below suggests some appropriate uses of this channel.

Paging and the use of tone-coded squelch are strongly discouraged on this as well as all mutual aid and common channels.

2. NATIONAL SEARCH AND RESCUE

The National Association of Search and Rescue officially promoted the use of 155.160 MHz as the nationwide SAR frequency in the early 1970's. Though it has been given no official recognition as such, the frequency has been licensed widely for SAR and some organizations hold multi-state and even regional licenses. In Montana, it may be used for communications between units of a licensee when such use doesn't interfere with interagency communications.

Paging and the use of tone-coded squelch are strongly discouraged on this as well as all mutual aid and common channels.

Law Enforcement Frequency Use by Agreement

Search and rescue groups may wish to obtain agreements from law enforcement agencies they work with allowing access to the latter's frequencies. FCC rules allow such agreements where a licensee can consider an outside unit as one of its own for communications with it, the licensee. Law enforcement agencies commonly do this to allow a degree of communications interoperability with those they regularly need to work with.

Access by agreement is left entirely to the discretion of the licensee. Agreements are not always the best answer to communications interoperability between individual organizations, especially where mutual aid radio is well established.

Licensing Frequencies

Special Emergency Radio Service (SERS) frequencies are available to search and rescue groups, as we know them, under FCC §90.37, "Rescue Organizations". This section also restricts organizations to one base station, one mobile for each vehicle actually used in operations, and two portable for each radio equipped vehicle. These restrictions notwithstanding, the shortage of frequencies in this service is the biggest impediment to licensing at this time.

In the VHF-high band, there are thirteen SERS frequencies for base and mobile use. Six of these are effectively unavailable to search and rescue because they are limited to EMS use. **VIOLET** and **PURPLE** are two of the remaining seven in the band, leaving five frequencies to be shared between SAR groups, veterinarians, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, and, in some cases, communications common carriers. Needless to say, a licensee is rarely an exclusive user in the Special Emergency Radio Service.

The FCC has designated the National Association of Business and Educational Radio (NABER) as SERS frequency coordinator. This organization, based in Alexandria, Virginia, does not use a local frequency advisor in Montana for coordination. Its address and phone numbers are provided in Part VIII of this manual.

Incident Communications Plans

The incident communications plans to be presented here for search and rescue are simple and only intended to suggest uses of the **GOLD**, **VIOLET**, and **PURPLE** channels. See Part I above for larger plans incorporating other mutual aid and common frequencies.

The simplest interagency communications plan for a search and rescue incident would use **GOLD**, as depicted in Figure 20 (Below).

As the State Common Mutual Aid frequency, **GOLD** is appropriately used at the highest operational level, which includes command in this example, between different public safety disciplines. It would not be appropriately used if only search and rescue groups were involved.

If two or more Montana search and rescue organizations are involved in an incident, the **PURPLE** channel would most appropriately be used for traffic between them. **GOLD** is still appropriate for higher-level command communications and separate, individually licensed channels may be used or shared at the team level for their coordination.

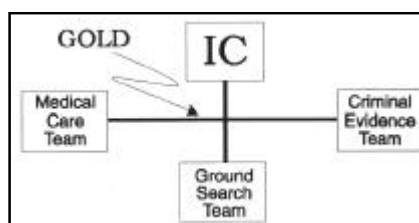


FIGURE 20

Figure 21 depicts an interagency search involving other public safety services and hasty teams from different Montana SAR organizations.

The most complex search and rescue communications plan to be offered here involves multiple Montana SAR teams, resources from outside the state, and other

responders. **GOLD** is used at the highest interagency operational level, **PURPLE** is dedicated to communications between Montana SAR teams, and **VIOLET** to resources from outside Montana who would more likely have this frequency than others. Additional frequencies might be used within the teams for their own coordination. Graphically, it might appear as depicted in Figure 22 (Below).

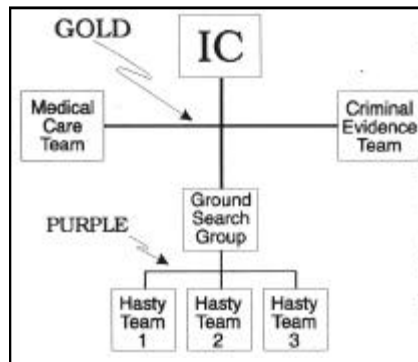


FIGURE 21

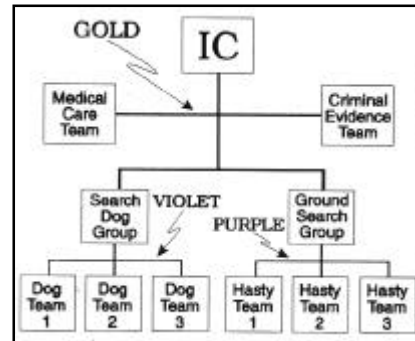


FIGURE 22

Part VII

Amateur Radio

Part VII - Amateur Radio

Amateur radio has a long and distinguished history of volunteer service to public safety. From yesteryear's spark gap transmitters through today's satellites, hams have been on the cutting edge of technology. Montana amateur radio operators can provide invaluable service to the state's public safety agencies and are eligible to use mutual aid and common frequencies while formally doing so. In addition, their own special voice, data, and video communications abilities can add tremendous depth and breadth to incident response.

The Amateur's Authority

Amateur operators are individually licensed by the FCC under authority of 47 CFR, Part 97. Public safety communications is one of the primary reasons for the amateur radio service. Several classes of license exist, ranging from Novice to Extra, but this is less important to public safety officials than it is to those who organize hams for emergency service.

Two official organizations are most likely to be of use: Radio Amateur Civil Emergency Service (RACES), which is recognized in FCC rules, and Amateur Radio Emergency Service (ARES), which is a well regulated branch of the national amateur radio league. State and local coordinators are available to help explain their groups' capabilities; DES officials can generally direct interested parties to the responsible individuals.

The Amateur's Role

Several likely roles are open to amateur operators in emergency response. ARES and RACES groups can provide supplemental local area, point-to-point, and long distance communications. They have been incorporated into state and local disaster communications plans, but may also be of assistance during lesser emergencies. While not an exhaustive list, the potential functions below are offered along with where they may fall in an Incident Command System (ICS) structure:

Field or Weather Observer - Situation Unit, Planning Section

Observers are used to feed incident information to the command post for planning purposes. Though generally given specific and narrow responsibilities as an incident progresses, observers may be pre-designated or organized during emergency preparedness planning. In the latter role they may provide the initial information which gives managers a clear picture of the incident's scope. Large-scale emergencies and disasters often disrupt normal lines of communications, further complicating situation assessment.

Information from observers may be channeled into the incident response in several ways. Reports from observers may be made directly to the Incident Communications Center (ICC) and relayed from there to the ultimate receiver. A more direct route may be preferable, though, particularly if the ICC is heavily involved with command or tactical traffic as it usually is early in an incident.

Alternately, amateurs may report to a network control station (NCS - another ham) outside the command post which then relays reports to the Situation Unit. The network control station would be ideally located at the command post for most direct information flow, but the physical site may not be ideal for communicating with wide-ranging resources.

However they are channeled, observer communications will most likely be done via voice. Preplanning should give priority to mobile, lightly equipped resources in most cases.

Network Control Station

The NCS is an amateur radio construct and has no direct analogue under the Incident Command System. For hams, the net control station maintains communications discipline and acts as the hub for a number of stations/operators. In the hierarchical structure of ICS, a “net” hub is either the Incident Communications Center, located at the Command Post, or simply the supervisory end of any communications path. For example, the NCS may be a radio operator assigned to the Situation Unit Leader in the Planning Section who is directly receiving observer reports from along a flooding river.

Hams are well advised to remember that network control stations are not commonly recognized in routine public safety communications, so the term may be meaningless to professionals in the field. With a firm understanding of ICS, amateur radio operators can effectively conduct a traditional net while recognizing it may have a different control station name or expanded functional responsibilities under ICS.

Incident Dispatcher - Communications Unit, Logistics Section

One or more incident dispatchers staff the Incident Communications Center (ICC) and are typically activated early in an incident. The term “dispatcher” does not adequately describe all the communications functions of this position which include passing messages internal and external to the incident and maintaining logs of certain occurrences.

Amateur operators may serve as incident dispatchers in several ways. Appropriately trained, they may serve in a general capacity using regular public safety communications facilities. They may serve as the de facto network control station for other amateurs passing operational, planning, or logistics traffic. Or they may be the packet (data radio) operator for an equally wide variety of communications types.

An incident dispatcher may be the initiator or recipient of “health and welfare traffic”, a traditional amateur radio role in times of disaster. A dispatcher may logically be the point of contact between the outside world and the incident for information about victims and near-victims. Many modes of communications are used to carry such traffic and hams diligently exercise their National Traffic System on a day-to-day basis. They take special precautions to assure the original message is delivered verbatim.

Communications Assistant - Communications Unit, Logistics Section

A person in this position provides assistance away from the ICC, typically at one of the other ICS fixed facilities: base camp, a helicopter base or landing spot, or spike camp. In a disaster, spike camps may be organized at triage sites, victim shelters, or aid stations, for example. The communications assistant is effectively the Communication Unit’s “field staff”, coordinating with camp managers to see their needs are met.

Similarly, assistants may be assigned to the incident commander, his general staff, or command staff (such as section chiefs, information officer, safety officer, and liaison officer). In this instance, the communications assistant serves much as does a radio-telephone operator in the military: a personal and technical resource to persons with heavy communications needs. This is an ideal function for properly trained hams.

Communications Technician - Communications Unit, Logistics Section

Even during small incidents, the need for communications technicians becomes readily apparent. Qualified persons are needed for setting up the Incident Communications Center, bringing telephone access to the Command Post, installing remote radio facilities, and testing equipment prior to fielding it. Amateur radio operators may be a valuable resource in this area. Often professional technicians are licensed amateurs whose vocation and avocations are inseparable and who may be invaluable in making an incident communications system work.

All told, hams offer a tremendous range of skills and capabilities - ones which make them valued members of an incident response. With appropriate training in ICS and public safety communications as it is practiced in a jurisdiction, amateur radio operators have a great deal to offer.

Part VIII

Management and

Administration

Part VII - Management and Administration

Montana Codes Annotated §2-17-312 gives the Department of Administration responsibility for developing policies and procedures for management of mutual aid frequencies. Frequency utilization plans for all mutual aid and most common frequencies have been developed by the Information Services Division of the Department of Administration and are attached to this document as Appendices B - I. Official policies and procedures for law enforcement and fire mutual aid frequencies are attached as Appendices J and K, respectively.

Authority to transmit on a radio frequency comes either through interagency agreement with a license holder or from direct license (with the FCC, in the case of state and local public safety). Generally speaking, access by agreement allows only communications with the license holder.

The Department of Administration holds statewide licenses for the fourteen mutual aid frequencies identified in this manual. They are held to allow other eligible users access to the frequencies by agreement. This access allows users to communicate with each other, not just with the license holder. This distinguishes mutual aid as implemented in Montana from all other radio frequencies.

The sections below cover details of interagency agreements, licensing mutual aid base stations and common frequencies, and contacts for matters involving these frequencies.

Interagency Agreements

Mutual aid agreements, for radio sharing and otherwise, reflect the critical dependence public entities have on one another. When made for shared access to radio frequencies and systems, they can provide the communications interoperability essential to coordinated public safety response.

1. LOCALLY LICENSED FREQUENCIES

The holder of a radio license with mobile authority can issue agreements authorizing use of the frequency by mobile units of other agencies for communications with itself, the license holder. The licensee is essentially considering the other units as its own for those communications. The non-licensed user is bound by all restrictions of the license such as power output and range of operation. The license holder may establish further restrictions as conditions of the agreement.

It should be understood that license to operate on a given frequency does not necessarily give the license holder authority to communicate on the frequency with other licensees. This is referred to as intersystems use and is restricted by the FCC. Mutual aid and common frequencies are intended primarily for such use. Standard agreements between individual agencies give outside units access to a system for communications with the license holder. Access is limited to mobile (including portable) transmitters.

Appendix L of this manual contains selected FCC Part 90 Rules and Regulations, Private Land Mobile Radio, including §90.421 which authorizes access by agreement. Appendix M contains a sample interagency agreement.

2. STATE OF MONTANA LICENSED FREQUENCIES

The State of Montana has the following frequencies licensed statewide for mutual aid use:

153.905 MHz	GOLD	State Common Mutual Aid
154.070	RED	State Fire Mutual Aid
154.280	MAROON	State Fire Command and Control
154.265	CORAL	State Fire Ground #1
154.295	SCARLET	State Fire Ground #2
153.830	RUBY	State Fire Repeater
159.345	GARNET	State Fire Repeater Control
155.475	BLUE	National Law Enforcement Emergency
155.790	SILVER	State Law Enforcement Mutual Aid
153.800	BLACK	State Tactical Team Coordination
155.280	WHITE	State Local Hospital to Ambulance
155.340	TAN	State Regional Hospital to Ambulance
155.325	GRAY	EMS Central Region Dispatch & Paging
155.385	PINK	EMS East/West Region Dispatch & Paging

Mobile access by agreement to all but the EMS frequencies is provided by the Department of Administration, Information Services Division. Temporary base station authority can be provided for the **MAROON** and **BLUE** frequencies. Temporary repeater and control station authority can be provided for the **RUBY** and **GARNET** frequencies, respectively.

Mobile access by agreement to the four EMS frequencies is provided through joint arrangement between the Department of Administration and the Department of Health and Environmental Sciences, EMS Bureau. Temporary base station authority can be provided for the **WHITE**, **TAN**, **GRAY**, and **PINK** frequencies. Requests should be directed to the EMS Bureau.

3. OTHER STATEWIDE LICENSED FREQUENCIES

The Department of State Lands and the U.S. Forest Service have common frequencies licensed statewide that are available for access by agreement for communications with their units.

Mobile access to the **YELLOW** frequency is available to those who need to communicate with Department of State Lands units. Requests should be submitted on agency or organization letterhead to the nearest DSL area Land Office. Addresses are listed in the next section.

Mobile access to the **GREEN** frequency is available to those who need to communicate with U.S. Forest Service units. It is licensed statewide by both the USFS and the Department of State Lands. Requests can be submitted either as they are for the **YELLOW** channel or to the USFS Region 1 Headquarters in Missoula. Addresses are listed in the next section.

Radio Licensing

Montana mutual aid and common frequencies can be licensed by individual agencies under certain conditions. Frequency plans adopted by the Department of Administration now allow fixed base stations on some mutual aid frequencies.

1. MUTUAL AID FIXED STATIONS

The **GOLD** and **SILVER** frequencies can be licensed for base station use with the FCC through APCO, the Association of Public-Safety Communications Officials. Licensure and use must be in accordance with the frequency plans included here as Appendices B and D, respectively. The Department of Administration has adopted policies and procedure which further affect eligibility for and use of the **SILVER** channel. See Appendix J.

The **RUBY** frequency can be licensed for permanent mutual aid repeaters which use **GARNET** as the input or mobile transmit frequency. Authorization to use **GARNET** in mobiles or temporary control stations is only available through agreement with the Department of Administration.

The **BLUE** frequency is available for installation in base stations, but all authorization is done through State of Montana licenses. The Department of Administration authorizes the bases then licenses them permanently under the name of the State through APCO.

WHITE, TAN, GRAY, and PINK are all intended primarily for base-mobile communications. They are Emergency Medical Radio Service frequencies and are coordinated and licensed with the FCC through the International Municipal Signal Association/International Association of Fire Chiefs (IMSA/IAFC). Applications for license are submitted through that organization.

2. COMMON FREQUENCIES

Common frequencies, as defined earlier in this manual, are distinguished from mutual aid by the fact they are not licensed statewide for communications between non-licensed users. The five identified here are:

155.820 MHz	BROWN	State DES Direction and Control
155.160	VIOLET	National Search and Rescue
155.220	PURPLE	State Search and Rescue
151.220	YELLOW	State Forestry, Department of State Lands
171.475	GREEN	U.S. Forest Service

Common frequencies must either be licensed by the user or accessed by agreement with a licensee, for communications with that licensee. Two are available only through agreements: **YELLOW** and . The other three are available under conditions of the frequency utilization plans attached here as appendices.

BROWN is an FCC Local Government frequency coordinated by APCO. Applications for license are submitted through that organization.

VIOLET and **PURPLE** are FCC Special Emergency Radio Service frequencies coordinated by the National Association of Business and Educational Radio (NABER).

Contact Agencies, Organizations, and Bodies

The following sections provide contact information for mutual aid and common frequency management, licensing, and oversight.

1. MUTUAL AID FREQUENCIES

Montana mutual aid radio frequencies are managed by the Information Services Division of the Department of Administration. It publishes reference materials, issues access agreements, coordinates policy, and addresses abuse problems. Requests for mutual aid access or routine temporary base authorization must be in writing; emergency requests may be phoned or faxed in.

The Mutual Aid access application may now be submitted electronically at:

<http://mutualaid.mt.gov>

The Emergency Medical Services Bureau of the Department of Health and Environmental Sciences maintains statewide licenses on the **WHITE, TAN, GRAY**, and **PINK** channels. It oversees the EMS Communications Plan and assigns DTMF codes for base stations under it. Access agreements for the frequencies may be issued by the EMS Bureau in instances where the prospective user is unlikely to license the frequencies, but needs access.

Emergency Medical Services & Trauma Systems
Department of Health and Human Sciences
Cogswell Building - Room C317
Helena, MT 59620
Phone: (406) 444-3895

Public Safety Services Radio
Department of Administration
101 N. Rodney
Weinstein Building
Helena, MT 59620
Phone: (406) 444-3581
Fax : (406) 444-1255

2. COMMON FREQUENCIES

The Department of State Lands can issue access agreements for the common frequencies it licenses statewide. Contact the nearest Land Office.

Southern Land Office
Department of State Lands
Airport Industrial Park
Billings, MT 59105-1978
(406) 247-4400

Eastern Land Office
Department of State Lands
321 Main St - Suite 5
Miles City, MT 59301
(406) 232-2034

Northeastern Land Office
Department of State Lands
613 N.E. Main Street
Lewistown, MT 59457-1021
(406) 538-7789

Central Land Office
Department of State Lands
8001 N. Montana Ave.
Helena, MT 59601
(406) 458-3500

Southwestern Land Office
Department of State Lands
1401 - 27th Ave.
Missoula, MT 59804
(406) 542-4200

Northwestern Land Office
Department of State Lands
2250 Highway 93 North
Kalispell, MT 59901-2557
(406) 751-2240

The Disaster and Emergency Services Division of the Department of Military Affairs maintains a statewide mobile and Helena base station license on the **BROWN** channel. It administers the S.E.C.U.R.E. Network of HF radios and oversees the State disaster communications plans.

Montana Disaster and Emergency Services Division
1900 Williams Street
Helena, MT 59602
Phone (406-444-6911)

Other questions about Montana's common public safety frequencies can be referred to the Information Services Division of the Department of Administration at the address listed above.

3. FREQUENCY LICENSING

The Federal Communications Commission (FCC) is responsible for licensing and policing all state and local public safety frequencies. The FCC Private Radio Bureau handles land mobile communications, including public safety. It relies on various private user organizations to coordinate the separate frequency services and to provide a good deal of license preprocessing. The official frequency coordination organizations are listed on the next page.

Private Radio Bureau
Federal Communications Commission
2025 M St., N.W.
Washington, DC 20554
(202) 632-6940

Land Mobile & Microwave Division	(202) 632-7597
Rules Branch	(202) 634-2443
Compliance Branch	(202) 632-7125

Licensing Division
Route 116
Gettysburg, PA 17325
(717) 337-1212

Land Mobile Branch	(717) 337-1411
Antenna Survey Branch	(717) 337-3268

FCC District Field Office (includes Montana)
11410 NE 122 Way - Suite 312
Kirkland, WA 98034
(206) 821-9037

The FCC-designated frequency coordination organizations are generally the first point of contact for someone wishing to license a radio frequency. Each charges a coordination fee for its services in addition to collecting any FCC fees.

Montana mutual aid and common frequencies available for licensing fall into five frequency services, handled by three different coordinators. Only APCO uses local advisors in each state for application assessment.

Local Government Radio Service - FCC Service Code PL
Police Radio Service - FCC Service Code PP

Association of Public-Safety Communications Officials (APCO)
Automated Frequency Coordination
2040 South Ridgewood Avenue
South Daytona, FL 32119
(904) 322-2500

Fire Radio Service - FCC Service Code PF
Emergency Medical Radio Service - FCC Service Code PM

International Association of Fire Chiefs/ International Municipal Signal Association (IAFC/IMSA)
P.O. Box 1513
Providence, RI 02901
(401) 738-2220

Special Emergency Service - FCC Service Code PS

National Association of Business and Educational Radio (NABER)
1501 Duke St.
Alexandria, VA 22314
(703) 739-0300

Management of federal radio frequencies is the responsibility of the Interdepartmental Radio Advisory Committee (IRAC), which functions under the National Telecommunications Information Administration of the U.S. Department of Commerce. While state and local agencies are not eligible for authorization in the federal spectrum, IRAC and the NTIA may be able to provide valuable information for shared operations or interference problems.

Interdepartmental Radio Advisory Committee (IRAC)**U.S. Department of Commerce, NTIA****Room 1605, HCHB Building****14th & Constitution Avenue, N.W.****Washington, DC 20230****4. MONTANA MUTUAL AID STEERING BODIES**

The Department of Administration relies on steering of mutual aid and common frequencies policy by three bodies: the General Frequency Oversight Council, the Law Enforcement Mutual Aid Radio Council, and the Fire Mutual Aid Radio Council.

The General Frequency Oversight Council has the following membership:

Chairman of the Law Enforcement Mutual Aid Radio Council**Chairman of the Fire Mutual Aid Radio Council****Chairman of APCO's Montana Frequency Advisory Committee****Frequency Manager for the Information Services Division**

The Law Enforcement Council is composed of one representative from the following organizations:

Montana Sheriffs and Peace Officers Association**Montana Association of Chiefs of Police****Montana Highway Patrol**

The Fire Council is composed of the following representatives:

Department of State Lands, Fire Management Bureau	- one person
Department of Justice, Fire Marshal Bureau	- one person
University System, Fire Services Training School	- one person
Montana State Volunteer Firefighters Association	- two persons
Montana Fire Chiefs Association	- two persons

A member of APCO's Montana Frequency Advisory Committee may be seated with each of the above councils for technical advice and direction. Information on the current members of these councils or their meeting schedule can be obtained from the Information Services Division.

Appendices

INCIDENT RADIO COMMUNICATIONS PLAN				1. INCIDENT NAME SAMPLE PLAN "A"	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME
4. BASIC RADIO CHANNEL UTILIZATION						
SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS	
	Gold	COMMAND	153.905	IC Group Supervisors		
	Tan	MEDICAL CARE TACTICAL	155.340	Medical Care Group Supervisors and Group Units		
	Red	HAZMAT TACTICAL	154.070	Hazmat Group Supervisors and Group Units		
	Silver	TRAFFIC CONTROL TACTICAL	155.790	Traffic Control Group Supervisor and Group Units		
205	ICS 8-78	5. PREPARED BY (COMMUNICATIONS UNIT)				

INCIDENT RADIO COMMUNICATIONS PLAN				1. INCIDENT NAME Sample Plan "B"	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME
4. BASIC RADIO CHANNEL UTILIZATION						
SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS	
	Gold	COMMAND	153.905	IC Group Supervisors		
	Tan	MEDICAL CARE OPERATIONS	155.340	Medical Care Group Supervisor and Units		
	Red	HAZMAT	154.070	Hazmat Group Supervisor, Containment and Decontamination team leaders		
	Silver	TRAFFIC CONTROL OPERATIONS	155.790	Traffic Control Group Supervisor, road block and traffic direction team leaders		
	A	ROAD BLOCK TACTICAL	[MHP Frequency]	Road block team leader and Units		
	B	TRAFFIC DIRECTION TACTICAL	[SO Frequency]	Traffic direction team leader and Units		
	C	CONTAINMENT TACTICAL	[RFD Frequency]	Containment team leader and Units		
	D	DECONTAMINATION TACTICAL	[City FD Frequency]	Decontamination team leader and Units		
205	ICS 8-78	5. PREPARED BY (COMMUNICATIONS UNIT)				

MUTUAL AID AND COMMON FREQUENCIES

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Appendix A

INCIDENT RADIO COMMUNICATIONS PLAN				1. INCIDENT NAME Sample Plan 'C'	2. DATES/TIME PREPARED	3. OPERATIONAL PERIOD DATES/TIME
4. BASIC RADIO CHANNEL UTILIZATION						
SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS	
	Brown	COMMAND	155.820	IC Command Staff General Staff EOC		
	Gold	OPERATIONS	153.905	Ops Section Chief, Hazmat, Medical care and traffic Control Group Supervisors		
	RED	HAZMAT TACTICAL	154.070	Hazmat Group Supervisor, Containment and decontamination Team leaders		
	TAN	MEDICAL CARE TACTICAL	155.340	Medical Care group Supervisor and Units		
	Silver	TRAFFIC CONTROL TACTICAL	155.790	Traffic Control group Supervisor, road block and traffic direction team leaders		
	*	[TEAM TACTICAL USE]	*	team leaders and their respective Units	* individual units use their own frequencies for intra-agency communications.	
205	ICS 8-78	5. PREPARED BY (COMMUNICATIONS UNIT)				

MONTANA MUTUAL AID RADIO

State Common Mutual Aid Frequency Plan

PURPOSE

To establish a statewide mutual aid frequency for common use by all public safety responders within Montana. It is established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.17, using the frequency 153.905 MHz.

ELIGIBILITY

The following will be eligible to use 153.905 within Montana, subject to applicable FCC Rules and Regulations. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

State of Montana: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement. It may license base stations on this frequency for state agency use consistent with this plan.

Other Users: Any agency, organization, or other entity engaged in the provision of public safety services shall be eligible to enter into agreement with the State of Montana for access to this frequency by agreement.

Bases: Any state agency, county, city, town or similar governmental entity eligible to hold authorization to operate radio stations under FCC Rules and Regulations, Part 90.17 Local Government Radio Service, is eligible to license the frequency 153.905 for base station use. Base stations will be limited to 100 watts of nominal power and antennas to 20 feet or less in height above ground or an existing building unless an exception is granted by the Montana Frequency Advisory Committee.

USAGE

The Montana common mutual aid frequency is established exclusively for interagency communications in support of public safety.

MONTANA MUTUAL AID RADIO

National Law Enforcement Emergency Frequency Plan

PURPOSE

To establish a statewide law enforcement emergency communications network within Montana under Federal Communications Commission (FCC) Rules and Regulations, Part 90.19, using the frequency 155.475 MHz.

ELIGIBILITY

The following will be eligible to use 155.475 within Montana. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

State of Montana: The State of Montana, Department of Administration shall maintain a statewide, fixed base and mobile license for this frequency to allow other eligible users mobile and/or temporary base station access by agreement. The State shall maintain all base station authorizations on this frequency under its license.

Law Enforcement: Except for itinerant federal law enforcement vehicles, a law enforcement agency must be a licensee in the police or local government radio service in order to be eligible to use this frequency.

Bases: Any law enforcement agency in the state meeting the above conditions shall be eligible to obtain base station authorization under the State's license on this frequency, subject to applicable FCC Rules and Regulations. All 24 hour law enforcement communications centers will be encouraged to install bases on 155.475.

Mobile: Any law enforcement agency may enter into agreement with the State of Montana to be included under its mobile license.

Others: Non-law enforcement agencies may maintain mobile radios on this frequency only as established here and only for emergency communications as outlined below.

Ambulances: An ambulance may enter into agreement with the State of Montana to be included under its mobile license for use statewide.

School Buses: Upon approval of the county sheriff, a school district may enter into agreement with the State of Montana to be included under its mobile license for use statewide in the district's school buses. Private bus contractors may operate under a district's authorization while serving that district.

USAGE

The Montana law enforcement emergency communications network is established exclusively for interagency emergency and itinerant law enforcement communications.

MONTANA MUTUAL AID RADIO

State Law Enforcement Mutual Aid Frequency Plan

PURPOSE

To establish a statewide mutual aid frequency for interagency law enforcement communications within Montana. It is established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.19, using the frequency 155.790 MHz.

ELIGIBILITY

The following will be eligible to use 155.790 within Montana, subject to applicable FCC Rules and Regulations. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

State of Montana: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement. It may license base stations on this frequency for state law enforcement agency use consistent with this plan.

Law Enforcement: Except for itinerant federal law enforcement vehicles, a law enforcement agency must be a licensee in the police or local government radio service in order to be eligible to use this frequency.

Bases: Any law enforcement agency in the state meeting the above conditions and having a base station installed on the frequency 155.475 MHz shall be eligible to license a base station on this frequency.

Mobile: Any law enforcement agency in the state meeting the above conditions shall be eligible to obtain a mobile license on this frequency for use within its jurisdiction. Law enforcement agencies may enter into agreement with the State of Montana for statewide mobile use authorization.

USAGE

The Montana law enforcement mutual aid frequency is established exclusively for law enforcement dispatch-to-dispatch communications and tactical operations.

MONTANA MUTUAL AID RADIO

State Tactical Team Coordination Frequency Plan

PURPOSE

To establish a statewide mutual aid frequency for interagency, law enforcement tactical team communications within Montana. It is established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.19, using the frequency 153.800 MHz.

ELIGIBILITY

The following will be eligible to use 153.800 MHz within Montana, subject to applicable FCC Rules and Regulations. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

State of Montana: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement.

Law Enforcement: Except for itinerant federal law enforcement units, a law enforcement agency must be a licensee in the police or local government radio service in order to be eligible to use this frequency.

Bases: No permanent base stations are allowed on this frequency for mutual aid use. Existing stations in Judith Basin County and the Town of Drummond shall maintain primary user status in those jurisdictions.

Mobile: Any law enforcement agency in the state meeting the above conditions may enter into agreement with the State of Montana for authorization under its mobile license.

USAGE

The Montana law enforcement tactical team coordination frequency is established exclusively for law enforcement tactical team operations. It is intended for use in portable radios and may only be used in vehicular radios in support of tactical team operations.

MONTANA MUTUAL AID RADIO

Fire Frequencies Plan

PURPOSE

To establish statewide fire mutual aid frequencies for interagency itinerant and emergency communications within Montana. These frequencies are established by authority of Montana Code Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.21, using the frequencies 154.070, 154.265, 154.280, 154.295, 153.830, and 159.345 MHz.

ELIGIBILITY

The following will be eligible to use fire mutual aid frequencies within Montana. Further rules and regulations affecting eligibility may be established by the Montana Department of Administration fire radio council.

State of Montana: The State of Montana, Department of Administration shall maintain a statewide license for temporary fixed bases on 154.280 and 153.830 MHz, temporary mobile relays on 153.830 MHz, temporary control stations on 159.345 MHz, and mobiles on all fire frequencies to allow eligible users access by agreement.

Fire Services: Except for itinerant federal entities, a fire protection organization or agency must be a licensee in the fire or local government FCC service in order to be eligible to use these frequencies.

Bases: Any fire service entity in the state meeting the above conditions shall be eligible to license a base station on 154.280 and/or mobile relay on 153.830 MHz, subject to applicable FCC Rules and Regulations and upon the written approval of the State of Montana, Department of Administration. No permanent base stations shall be allowed on 154.070, 154.265, or 154.295 MHz, except that those licensed prior to 1989 may be retained for mutual aid purposes.

Mobile: Any fire service entity may enter into agreement with the State of Montana to be included under its mobile or temporary control station license.

USAGE

The Montana fire mutual aid frequencies are established exclusively for interagency emergency and itinerant fire services communications.

MONTANA MUTUAL AID RADIO

EMS Frequencies Plan

PURPOSE

To establish statewide emergency medical services (EMS) common frequencies for interagency itinerant and emergency communications within Montana. The frequencies 155.280, 155.340, 155.325, and 155.385 MHz are so established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.

ELIGIBILITY

All Montana emergency medical service providers are eligible to license the Special Emergency Radio Service frequencies 155.280, 155.340, 155.325, and 155.385 for the uses approved here. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

USAGE

The Montana EMS common frequencies are established exclusively for EMS interagency emergency and itinerant communications. The use of each frequency is as follows:

155.280 MHz -Local hospital - ambulance communications. Paging is not allowed.

155.340 MHz -Regional hospital - ambulance communications. Secondly, EMS interagency communications at an incident scene.

155.325 MHz -Central region (2A & 2B) dispatch and paging. Secondly, EMS interagency communications in the western and eastern regions at an extended (mass casualty) incident scene.

155.385 MHz -Western and eastern region (1A, 1B, 3A, & 3B) dispatch and paging. Secondly, EMS interagency communications in the central region at an extended (mass casualty) incident scene.

MONTANA MUTUAL AID RADIO

DES Direction and Control Frequency Plan

PURPOSE

To establish a statewide common frequency for interagency direction and control communications during disaster or emergency situations. The frequency 155.820 MHz is so established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.

ELIGIBILITY

The following will be eligible to use the DES Direction and Control Frequency within Montana. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

State of Montana: The State of Montana, Department of Administration and the Department of Military Affairs, DES Division shall be eligible to license 155.820 MHz statewide for mobile, temporary fixed base, and temporary fixed mobile relay use for the purposes set forth in this plan. The DES Division shall be eligible to license the frequency for fixed mobile relay (FB2) use to support operation of the State Emergency Operations Center for the purposes set forth in this plan. The frequency 153.965 MHz is reserved statewide as the input frequency for these relays and for future expansion of DES communications.

Other Government Entities: Any state agency, county, city, town or similar governmental entity eligible to hold authorization to operate radio stations under FCC Rules and Regulations, Part 90.17 Local Government Radio Service, is eligible to license the frequency 155.820 for base and/or mobile use, subject to all FCC Rules and Regulations.

USAGE

The Montana DES Direction and Control Frequency is established exclusively for emergency management communications by elected or appointed officials of the executive branch of government, emergency response agency department heads and supervisors, and other department heads who have specific emergency assignments. It is for communications essential to direction and control needs during a disaster or emergency situation.

MONTANA MUTUAL AID RADIO

Search and Rescue Frequencies Plan

PURPOSE

To establish statewide search and rescue common frequencies for interagency emergency communications within Montana. The frequencies 155.160 and 155.220 MHz are so established by authority of Montana Codes Annotated §2-17-312 and in accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 90.

ELIGIBILITY

The following will be eligible to use search and rescue common frequencies within Montana. Further rules and regulations affecting eligibility may be established by an advisory council to the Montana Department of Administration.

Search and Rescue Organizations: Persons or organizations eligible to hold radio station authorization under FCC §90.37, to wit, those operating a rescue squad, are eligible to use Montana search and rescue common frequencies. Lost person search units are considered rescue squads for purposes of definition under this plan and interpretation of FCC rules. Licensure on 155.160 or 155.220 MHz shall not affect the eligibility of an organization for further Special Emergency Radio Service frequencies under FCC §90.37(b).

Bases: Any search and rescue organization in the state meeting the above conditions shall be eligible to obtain base station authorization from the FCC on the frequencies 155.160 and 155.220 MHz, subject to applicable FCC Rules and Regulations.

Mobile: Any search and rescue organization in the state meeting the above conditions shall be eligible to obtain mobile-only authorization from the FCC on the frequencies 155.160 and 155.220 MHz or include mobile authorization under a base station license, subject to applicable FCC Rules and Regulations.

USAGE

The Montana search and rescue common frequencies are established primarily for interagency search and rescue communications. Intra-agency use is allowed on a secondary basis when it does not interfere with interagency communications.

MONTANA MUTUAL AID RADIO

POLICIES AND PROCEDURES

Law Enforcement Frequencies

PREFACE

This document establishes policies and procedures for the use of Montana's law enforcement mutual aid radio frequencies. The Montana Department of Administration is vested with authority to develop and maintain a land mobile public safety radio frequency utilization plan, including these policies and procedures (MCA 2-17-312).

Three frequencies are established for law enforcement use:

155.475 MHz - BLUE - National Law Enforcement Emergency

155.790 MHz - SILVER - State Law Enforcement Mutual Aid

153.800 MHz - BLACK - State Tactical Team Coordination

Policies and procedures for these three are covered here. A fourth frequency is established for general public safety use, including law enforcement:

153.905 MHz - GOLD - State Common Mutual Aid

The color designations are offered here as a simple naming convention for the different channels. They are used in this document where the actual frequency or descriptive name is not needed.

OVERSIGHT

A council consisting of one representative from each of the following organizations provides oversight for law enforcement mutual aid radio to the Department of Administration:

Montana Sheriffs and Peace Officers Association

Montana Association of Chiefs of Police

Montana Highway Patrol

The Montana Highway Patrol is responsible for representing all State of Montana law

enforcement users.

A member of the Association of Public Safety Communications Officials, Montana Frequency Advisory Committee, may be seated with the council for technical advice and direction.

ELIGIBILITY

The following will be eligible users within Montana:

State of Montana: State of Montana law enforcement entities are eligible to use these frequencies as described in the next paragraph. In order to help manage mutual aid frequencies and their use, the following responsibilities exist.

BLUE - The Department of Administration shall maintain a statewide temporary fixed base and mobile license for this frequency to allow other eligible users mobile and/or temporary base station access by agreement. It shall maintain all base station authorizations on this frequency under its name.

SILVER - The Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement. It may license base stations on this frequency for state law enforcement agency use.

BLACK - The Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement.

Law Enforcement: Except for federal entities, a law enforcement agency must be a licensee in the police or local government radio service in order to be eligible to use these frequencies.

BLUE

Bases: Any law enforcement agency in the state meeting the above conditions shall be eligible to obtain base station authorization under the State's license on this frequency, subject to applicable FCC Rules and Regulations. All 24 hour law enforcement communications centers will be encouraged to install bases.

Mobile: Any law enforcement agency may enter into agreement with the State of Montana to be included under its mobile license.

SILVER

Bases: Any law enforcement agency in the state meeting the above conditions and having a **BLUE** base station installed shall be eligible to license a base station on this frequency, subject to applicable FCC Rules and Regulations.

Mobile: Any law enforcement agency in the state meeting the above conditions shall be eligible to obtain a mobile license on this frequency for use within its jurisdiction. Law enforcement agencies may enter into agreement with the State of Montana for statewide mobile use authorization.

BLACK

Bases: Bases are not allowed on this frequency for mutual aid use. Fixed stations in Judith Basin County and the Town of Drummond exist and are to be afforded primary use of the frequency in case of interference.

Mobile: Any law enforcement agency may enter into agreement with the State of Montana to be included under its mobile license for tactical team operations. Use is restricted to portable radios, except that the frequency may be used in vehicular radios in support of tactical team operations.

OTHERS

Non-police agencies may maintain mobile radios on law enforcement mutual aid frequencies only as established here and only for emergency communications as outlined under the “Operational Procedures” section of this document. Under no circumstances may they have base stations on these frequencies.

Ambulances: An ambulance may enter into agreement with the State of Montana to be included under its mobile license for use statewide of the **BLUE** channel.

Buses: A school district may enter into agreement with the State of Montana for statewide mobile use of the **BLUE** channel in its buses. Access must be approved in writing by the district’s local sheriff. Private bus contractors may operate under a district’s authorization while serving that district.

LICENSING AND AUTHORIZATION

Authority for use of the Montana law enforcement mutual aid frequencies is obtained through licensure with the FCC and by agreement with the Department of Administration. The differing procedures for the **BLUE**, **SILVER**, and **BLACK** frequencies are covered here.

BLUE (155.475 MHz) - Base station and mobile use of this frequency is authorized by agreement with the Department of Administration. An agency interested in using it may request authorization by letter. Figure 1 below is a sample base station request. Figure 2 is a sample mobile agreement request. These samples contain information necessary for the agreement to be issued.

SILVER (155.790 MHz) - Mobile use of this frequency may be authorized by agreement with the Department of Administration. Figure 2 is a sample mobile agreement request.

Base and/or mobile licensing with the FCC may alternately be pursued by individual agencies. Forms required for licensing are available from the Department of Administration, Information Services Division.

The Montana Frequency Advisory Committee (MFAC), a committee of the state chapter of the Association of Public-Safety Communications Officials, will review applications for conformity with these policies and procedures. It may recommend changes to limit range or harmful interference potential. The oversight council established herein shall arbitrate when MFAC and the applicant agency cannot come to agreement.

As established under Eligibility above, only agencies with a base on the **BLUE** frequency may license a base on this frequency.

BLACK (153.800 MHz) - Mobile (including portable) use of this frequency may be authorized by agreement with the Department of Administration. Figure 2 is a sample agreement request.

Neither base stations, nor direct mobile licensing with the FCC are allowed on this mutual aid frequency.

28 AUG 05

Public Safety Radio Communications Program
 Department of Administration
 101 N. Rodney, Weinstein Building
 Helena, MT 59620

Dear Folks:

We, the [**AGENCY NAME**], are requesting authorization to install a fixed base station on the National Law Enforcement Emergency Frequency, 155.475 MHz. Transmitter site details and technical parameters are as follows:

Location _____ [descriptive name] _____ Geographic Coordinates: _____

Output Power _____ watts Latitude ____-____-____

Antenna Gain _____ db Longitude ____-____-____

Effective Radiated Power _____ watts Elevation (ft) _____

Estimated Area Covered:
 Antenna Hgt to Tip _____ ft
 (above ground)

Mounting Structure _____ ft Others Licensed on Structure:
 (tower, pole, etc.) _____ (call signs) _____
 Height to Tip _____

Primary Control Point _____

Street Address _____

Telephone _____

Technical Contact Person (Name and Phone) _____

We agree to abide by all FCC regulations as well as policies and procedures developed by the State of Montana for the use of this frequency. It is understood that alternate location and technical parameter suggestions may be made by the Department of Administration. We agree to keep the Department of Administration informed, as the FCC licensee, of any planned changes in the location or technical parameters of the transmitter or any permanent deactivation of it.

Sincerely,

[**AGENCY ADMINISTRATOR**]

FIGURE 1 - Base Station Request (BLUE)

28 AUG 05

Public Safety Radio Communications Program
Department of Administration
101 N. Rodney, Weinstein Building
Helena, MT 59620

Dear Folks:

The [**AGENCY NAME**], is requesting authorization to install the following Montana mutual aid radio frequency(s) in mobile radios under its control:

155.475 MHz - BLUE - National Law Enforcement Emergency

and/or

155.790 MHz - SILVER - State Law Enforcement Mutual Aid

and/or

153.800 MHz - BLACK - State Tactical Team Coordination]

The frequency(s) will be placed in a total of _____ mobile and portable radios. The Department of Administration will be notified of any needed increase in this number.

We agree to abide by all policies and procedures developed for the use of this frequency by the State of Montana as well as by FCC regulations.

Sincerely,

[**AGENCY ADMINISTRATOR**]

[**AGENCY ADDRESS**]

[**AGENCY PHONE NUMBER**]

FIGURE 2 - Mobile Agreement Request (BLUE, SILVER, or BLACK)

OPERATIONS

The following operational requirements and procedures are established to make most effective use of the Montana law enforcement mutual aid frequencies. These frequencies are intended for law enforcement interagency communications. Allowances for other users are made only for emergency contact with law enforcement agencies or officers.

The phrase “letter of authorization” as used in this section is meant to include any formal agreement adopted by the Department of Administration for use with mutual aid radio frequencies. Nothing in this section should be construed as prohibiting the installation of any frequency for receive-only operations (monitoring).

REQUIREMENTS

Police agencies seeking to use the Montana law enforcement mutual aid frequencies must meet FCC eligibility requirements:

FCC §90.19(a) - Eligibility. Any territory, possession, state, county, city, town, and similar governmental entity including a governmental institution authorized by law to provide its own police protection, is eligible to hold authorizations in the Police Radio Service to operate radio stations for transmission of communications essential to official police activities of the licensee.

Police agencies seeking to install a base station on the **BLUE** frequency must have a letter of authorization from the Department of Administration and post a copy of the State’s FCC license covering the installation as required by FCC §90.437 before commencing operations. Agencies are bound by agreement to all applicable FCC rules and regulations.

Police agencies seeking to install a base station on the **SILVER** frequency must have an FCC license authorizing such installation before commencing operations. Agencies are bound by law to all applicable FCC rules and regulations. Installation of a base station on the **BLUE** frequency is required before license applications for this frequency will be approved by state authorities.

Police agencies seeking to use the **BLUE**, **SILVER**, or **BLACK** channels in mobile or portable radios must provide an accurate estimate of the number of intended installations and must receive a letter of authorization from the Department of Administration before commencing operations. Alternately, an agency may license the **SILVER** frequency directly with the FCC for mobile use within its jurisdiction.

Ambulance services seeking to use the **BLUE** channel must be licensed as such by the Montana EMS Bureau. Access to this channel is provided for ambulance services that cross multiple law enforcement jurisdictions and have a large geographic responsibility. It is neither intended for all EMS providers nor as a substitute for local operational channels.

Bus services seeking to use the **BLUE** channel must be providers of student transportation for recognized Montana school districts, colleges, universities, or local government entities. Access to this channel is provided for bus services to contact law enforcement agencies or officers with emergency communications, only. Access must be approved by the district's local sheriff. Private bus contractors may operate under a district's authorization while serving that district.

PROCEDURES

Different uses are intended for each of the mutual aid frequencies.

The **BLUE** channel is for emergency communications and initial contact on more routine matters. Short, infrequent transmissions make it most available for sudden emergency traffic. It must be monitored widely to be of most value.

The **SILVER** channel is for dispatch-to-dispatch communications and tactical operations. Overlapping coverage and interference to some degree is anticipated. It is a shared operational resource between law enforcement agencies.

The **BLACK** channel is for interagency coordination of tactical teams. It is intended for use in portable radios, but may be placed in mobiles that support coordination of tactical operations (e.g. command post vehicles). The frequency is used in fixed stations by Judith Basin County and the Town of Drummond; these stations are considered the primary users if interference arises.

Priority Use Levels: Five priority use levels are established. Higher priority communications take precedent over lower.

1. Immediate Peril - An immediate threat to human life exists
2. Disaster or Extreme Emergency - An imminent threat to human life or of large scale property destruction exists
3. Routine Emergency - Distinguished from the above by scale or nearness of threat
4. Urgent Administrative or Itinerant
5. Training and Drills

Permissible Uses:

Three usage classes are charted below with their permissibility - all communications are considered two-way.

	<u>Base - Mobile</u>	<u>Base - Base</u>	<u>Mobile - Mobile</u>
BLUE	YES	NO	YES
SILVER	YES	YES	YES (secondary)
BLACK	NO	NO	YES

Clear Text:

The use of clear text is encouraged for all mutual aid frequencies. The use of codes, signals, and call numbers are discouraged for interoperability reasons. Functional or mnemonic names for radio frequencies are encouraged; the use of channel numbers ('channel 1', 'channel 2', etc.) leads to confusion in interagency communications.

Frequency Monitoring:

Users of any mutual aid frequency are required to monitor the frequency prior to transmitting to detect higher priority traffic. When need be, an "EMERGENCY TRAFFIC" interruption or "EMERGENCY TRAFFIC ONLY" broadcast can be made.

Agencies with **BLUE** base stations installed must monitor the frequency at all times their facility is operational. A separate receiver for this frequency is encouraged to prevent other traffic or transmissions from covering it. Mobile monitoring of the channel at all times by all users is encouraged, as well.

Itinerant Services: All users of these frequencies must render service to itinerant vehicles on the frequencies as such traffic relates to the provision of public safety.

DTMF Encoding: The following plan is provided for the common use of DTMF encoding on **SILVER** base stations. Encoding is an option some agencies may consider to reduce extraneous traffic in their communications centers.

DTMF Codes - Suggested codes consist of three digits, the first two being the county number as used on vehicle license plates and the last being a intra-county

Appendix J

selector. The last digit is also used for group call selection. Agencies employing this form of muting should allow receiver selection by their individual, county all-call, regional all-call, and state all-call codes. Leading zeroes (0) must be used.

000	-	State All-Call
0nn	-	Regional All-Call (see note below)
nn0	-	County All-Call
nn1,nn2	-	County Sheriff (within county nn)
nn3,nn4,nn5	-	City Police Codes (within county nn)
nn6	-	Fish, Wildlife, and Parks
nn7	-	Montana Highway Patrol

Regional codes will be issued as requested by the Information Services Division. Agencies are asked to request assignment of regional codes as needed to guarantee a common plan across the state. Codes in use will be published by the Information Services Division.

Example: Possible Yellowstone County DTMF codes

031	-	Yellowstone Co. SO
032	-	Yellowstone Co. SO Jail
033	-	Billings Police Department
034	-	Laurel Police Department
036	-	Fish, Wildlife, and Parks Billings office
037	-	Montana Highway Patrol Billings office

Each agency in the county should also consider including the following codes:

000	-	State All-Call
001	-	Regional All-Call (Yellowstone and surrounding counties - example only)
030	-	County All-Call

DISCIPLINE

The policies and procedures established here, combined with the FCC Rules and Regulations: Part 90, compose the usage guidelines for the Montana law enforcement mutual aid radio oversight council shall be vested with the authority to deal with complaints of abuse brought before it.

MONTANA MUTUAL AID RADIO **POLICIES AND PROCEDURES** **Fire Frequencies**

PREFACE

This document establishes policies and procedures for the use of Montana's fire mutual aid radio frequencies. The Montana Department of Administration is vested with authority to develop and maintain a land mobile public safety radio frequency utilization plan, including these policies and procedures (MCA 2-17-312).

Six frequencies are established for fire service use:

154.070 MHz	RED	State Fire Mutual Aid
154.280 MHz	MAROON	State Fire Command and Control
154.265 MHz	CORAL	State Fire Ground #1
154.295 MHz	SCARLET	State Fire Ground #2
153.830 MHz	RUBY	State Fire Repeater
159.345 MHz	GARNET	State Fire Repeater Control

Policies for these frequencies are covered here. A seventh frequency is established for general public safety use, including for fire services:

153.905 MHz	GOLD	State Common Mutual Aid
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The color name designations are offered here as a simple naming convention for the different channels. They are used in this document where the actual frequency or descriptive name is not needed.

OVERSIGHT

A council consisting of representatives as indicated from each of the following organizations/agencies provides oversight for fire mutual aid radio to the Department of Administration:

Department of State Lands, Fire Management Bureau	- one person
Department of Justice, Fire Marshal Bureau	- one person
University System, Fire Services Training School	- one person
Montana State Volunteer Firefighters Association	- two persons
Montana Fire Chiefs Association	- two persons

A member of the Association of Public-Safety Communications Officials, Montana Frequency Advisory Committee, may be seated with the council for technical advice and direction.

ELIGIBILITY

The following will be eligible users within Montana.

MAROON

Bases: The State of Montana, Department of Administration shall maintain a statewide temporary fixed base license for this frequency to allow other eligible users access by agreement.

Mobile: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement.

RUBY

Bases: The State of Montana, Department of Administration shall maintain a statewide temporary mobile relay license for this frequency to allow other eligible users temporary mobile relay access by agreement.

Mobile: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement.

GARNET

Bases: The State of Montana, Department of Administration shall maintain a statewide temporary control station license for this frequency to allow other eligible users temporary control station access by agreement.

Mobile: The State of Montana, Department of Administration shall maintain a statewide mobile license for this frequency to allow other eligible users mobile access by agreement.

RED, CORAL, AND SCARLET

Bases: Permanent base stations are expressly prohibited, except that those existing prior to 1989 may be retained for mutual aid purposes.

Mobile: The State of Montana, Department of Administration shall maintain statewide mobile licenses for these frequencies to allow other eligible users mobile access by agreement.

FIRE SERVICES

Except for federal entities, a fire protection organization or agency must be a licensee in the fire or local government FCC service in order to be eligible to use these frequencies. In addition, any public safety agency is eligible for authorization by agreement for any fire mutual aid frequency for multi-disciplinary operations.

MAROON

Bases: Any fire service entity in the state meeting the above conditions shall be eligible to obtain base station authorization on this frequency, subject to applicable FCC Rules and Regulations and upon the written approval of the Department of Administration.

Mobile: Any fire service entity in the state meeting the above conditions shall be eligible to enter into agreement with the State of Montana to be included under their mobile license.

RUBY

Bases: Any fire service entity in the state meeting the above conditions shall be eligible to obtain mobile relay authorization on this frequency, subject to applicable FCC Rules and Regulations and upon the written approval of the State of Montana, Department of Administration.

Mobile: Any fire service entity in the state meeting the above conditions shall be eligible to enter into agreement with the State of Montana to be included under its mobile license.

GARNET

Bases: Any fire service entity meeting the above conditions shall be eligible to enter into agreement with the State of Montana to be included under its temporary control station license. Permanent base or control station licensing by individual fire service entities is expressly prohibited.

Mobile: Any fire service entity in the state meeting the above conditions shall be eligible to enter into agreement with the State of Montana to be included under its mobile license.

RED, CORAL, AND SCARLET

Bases: Base station licensing after November 1, 1989 on these frequencies is expressly prohibited.

Mobile: Any fire service entity in the state meeting the above conditions shall be eligible to enter into agreement with the State of Montana to be included under its mobile license.

Licensing and Authorization

Authority for use of the Montana fire mutual aid frequencies is obtained through licensing with the FCC and by agreement with the Department of Administration. The differing procedures for the **MAROON, RUBY, GARNET, RED, CORAL,** and **SCARLET** frequencies are covered here.

MAROON (154.280 MHz) - Temporary base station and mobile use of this frequency is authorized by agreement with the Department of Administration. An agency interested in using it may request authorization by letter. Mutual Aid access applications may now be submitted electronically at <http://mutualaid.mt.gov>. Figure 1 on page 95 is a sample temporary base station request. Figure 2 on page 96 is a sample mobile agreement request. These samples contain information necessary for the agreement to be issued.

Permanent base stations may be licensed directly with the FCC upon the written approval of the Department of Administration. Such licensing is for intersystems operations only and these operations must be primarily base-mobile communications (FCC 90.21c2). Permanent licenses are for interagency operations only and any number of agencies may be licensed within a given geographical area.

RUBY (153.830 MHz) - Temporary base station, mobile relay, and mobile use of this frequency is authorized by agreement with Department of Administration. An agency interested in using it may request authorization by letter as described for **MAROON**, above.

Permanent mobile relays may be licensed directly with the FCC upon written approval of the State of Montana, Department of Administration. Applications for such stations must include a statement of how the permanent station will benefit fire service agencies in the covered area. Permanent licenses are for interagency operations only and any number of agencies may be licensed within a given geographical area.

GARNET (159.345 MHz) - Temporary control station and mobile use of this frequency is authorized by agreement with Department of Administration. An agency interested in using it may request authorization by letter as described for **MAROON** (previous page).

No permanent control stations may be licensed on this frequency.

RED, CORAL, SCARLET (154.070, 154.265, 154.295 MHz, respectively)

Mobile: use of these frequencies may be authorized by agreement with the Department of Administration. Figure 2 is a sample mobile agreement request.

Direct base and/or mobile licensing by individual entities has not been allowed after November 1, 1989.

Appendix K

28 APR 94

Public Safety Radio Communications Program
 Department of Administration
 101 N. Rodney, Weinstein Building
 Helena, MT 59620

Dear Folks:

We, the [AGENCY NAME], are requesting authorization to install a temporary fixed base station on the State Fire Command and Control Frequency, 154.280 MHz. Transmitter site details and technical parameters are as follows:

Location _____ [descriptive name] _____ Geographic Coordinates: _____

Output Power _____ watts Latitude ____-____-____

Antenna Gain _____ db Longitude ____-____-____

Effective Radiated Power _____ watts Elevation (ft) _____

Estimated Area Covered:

Antenna Hgt to Tip _____ ft
 (above ground)

Mounting Structure _____ ft Others Licensed on Structure:
 (tower, pole, etc.) _____ (call signs) _____
 Height to Tip _____

Primary Control Point _____

Street Address _____

Telephone _____

Incident Name _____

Anticipated Date of Need From: _____ (mm/dd/yy)
 To: _____ (mm/dd/yy)

We agree to abide by all FCC regulations as well as policies and procedures developed by the State of Montana for the use of this frequency. It is understood that alternate location and technical parameter suggestions may be made by the Department of Administration. We agree to contact the Department, as the FCC licensee, before making any changes in the location or technical parameters of the transmitter and upon deactivation of it.

Sincerely,

[AGENCY ADMINISTRATOR]

FIGURE 1 - Temporary Base Station Request (MAROON)

28 APR 94

Public Safety Radio Communications Program
Department of Administration
101 N. Rodney, Weinstein Building
Helena, MT 59620

Dear Folks:

The [AGENCY NAME], is requesting authorization to install the following Montana mutual aid radio frequency(s) in mobile radios under its control:

154.070 MHz - **RED** - State Fire Mutual Aid

and/or

154.265 MHz - **CORAL** - State Fire Ground #1

and/or

154.280 MHz - **MAROON** - State Fire Command and Control

and/or

154.295 MHz - **SCARLET** - State Fire Ground #2

and/or

153.830 MHz - **RUBY** - State Fire Repeater

and/or

159.345 MHz - **GARNET** - State Fire Repeater Control]

The frequency(s) will be placed in a total of _____ mobile and portable radios. The Department of Administration, Department of Administration, will be notified of any needed increase in this number.

We agree to abide by all policies and procedures developed for the use of mutual aid radio frequencies by the State of Montana as well as by all applicable FCC regulations.

Sincerely,

[AGENCY ADMINISTRATOR]

FIGURE 2 - Mobile Agreement Request (fire mutual aid)

OPERATIONS

The following operational requirements and procedures are established to make most effective use of the Montana fire mutual aid frequencies. These frequencies are intended for fire interagency communications.

The phrase “letter of authorization” as used in this section is meant to include any formal agreement adopted by the Department of Administration for use with mutual aid radio frequencies. Nothing in this section should be construed as prohibiting the installation of any frequency for receive-only operations (monitoring).

REQUIREMENTS

Fire organizations or agencies seeking to use the Montana fire mutual aid frequencies must meet FCC eligibility requirements:

FCC §90.21(a) - Eligibility. Any territory, possession, state, county, city, town or similar governmental entity, and persons or organizations charged with specific fire protection activities are eligible to hold authorizations in the Fire Radio Service to operate radio stations for transmission of communications essential to official fire activities of the licensee. Applications from persons or organizations other than governmental entities must be accompanied by a statement from the governmental entity having legal jurisdiction over the area to be served, supporting the request.

Fire service entities seeking to install a permanent station on the **MAROON** or **RUBY** frequencies must have an FCC license authorizing such installation before commencing operations. Licensees are bound by law to all applicable FCC rules and regulations.

Fire service entities seeking to use any mutual aid channel in mobile radios must have a current, valid agreement with the Department of Administration. An accurate estimate of the number of installations must be provided and a letter of authorization received before operations are commenced.

PROCEDURES

Different uses are intended for each of the mutual aid frequencies. The **RED** channel is the primary fire tactical channel. It was first designated for mutual aid radio in Montana in 1984 and its use is continued. It should be the first choice for on-scene interagency communications.

The **MAROON** channel is for interagency dispatch and multi-agency command and control. Its primary use is for base-mobile communications. Overlapping coverage of base stations and interference to some degree is anticipated. It is a shared operational resource between fire organizations and agencies.

The **RUBY** and **GARNET** channels are paired for mobile relay use, with 153.830 being used as the output frequency of the relay (or fixed base under talk-around use) and 159.345 being used as the control or input frequency to the relay. Its primary use is for mobile-mobile communications. Overlapping coverage of base stations and interference to some degree is anticipated. It is a shared operational resource between fire organizations and agencies.

The **CORAL** and **SCARLET** channels are additional secondary fire ground channels. They are available for on-scene interagency communications where incident scope requires additional ground channels.

Priority Use Levels: Five priority use levels are established. Higher priority communications take precedent over lower.

1. Immediate Peril - An immediate threat to human life exists
2. Disaster or Extreme Emergency - An imminent threat to human life or of large-scale property destruction exists
3. Routine Emergency - Distinguished from the above by scale or nearness of threat
4. Urgent Administrative or Itinerant
5. Training and Drills

Permissible Uses: Three usage classes are charted below with their permissibility - all communications are considered two-way.

	Base - Mobile	Base - Base	Mobile - Mobile
RED	NO	NO	YES
CORAL	NO	NO	YES
SCARLET	NO	NO	YES
RUBY	YES	NO	YES
GARNET	YES	NO	YES
MAROON	YES	YES	YES
		(secondary)	(secondary)

Clear Text:

The use of clear text is encouraged for all mutual aid frequencies. The use of codes, signals, and call numbers are discouraged for interoperability reasons. Functional or mnemonic names for radio frequencies are encouraged; the use of channel numbers ('channel 1', 'channel 2', etc.) leads to confusion in interagency communications.

Frequency Monitoring:

Users of any mutual aid frequency are required to monitor the frequency prior to transmitting to detect higher priority traffic. When need be, an "EMERGENCY TRAFFIC" interruption or "EMERGENCY TRAFFIC ONLY" broadcast can be made.

Agencies with **MAROON** base stations installed should monitor the frequency at all times their facility is operational. A separate receiver for this frequency is encouraged to prevent other traffic or transmissions from covering it. Mobile monitoring of the channel at all times by all users is encouraged, as well.

Itinerant Services:

All users of these frequencies must render service to itinerant vehicles on the frequencies as such traffic relates to the provision of public safety.

DISCIPLINE

The policies and procedures established here, combined with the FCC Rules and Regulations: Part 90, compose the usage guidelines for the Montana fire mutual aid radio frequencies. Failure to abide by these policies and procedures could result in the removal of authority to operate on any mutual aid frequency.

The Department of Administration's fire mutual aid radio oversight council shall be vested with authority to deal with complaints of abuse brought before it.

Frequencies:

Failure to abide by these policies and procedures could result in the removal of authority to operate on any mutual aid frequency. The Department of Administration's law enforcement mutual aid radio oversight council shall be vested with authority to deal with complaints of abuse brought before it.

Selected FCC Codes - Part 90: Private Land Mobile Radio Services

§90.1 Basis and purpose. - (a) Basis. The rules in this part are promulgated under Title II of the Communications Act of 1934, as amended, which vests authority in the Federal Communications Commission to regulate radio transmission and to issue licenses for radio stations. All rules in this part are in accordance with applicable treaties and agreements to which the United States is a party.

(b) Purpose. This part states the conditions under which radio communications systems may be licensed and used in the Public Safety, Special Emergency, Industrial, Land Transportation, and Radiolocation Services. These rules do not govern radio systems employed by agencies of the Federal Government.

SUBPART B - Public Safety Radio Services

§90.15 Scope. The Public Safety Radio Services include the Local Government, Police, Fire, Highway Maintenance, and Forestry-Conservation Radio Services. Rules as to eligibility for licensing, frequencies available, and any special requirements as to each of these radio services are set forth in the following sections.

§90.16 Public Safety National Plan. The Commission has established a National Plan which specifies special policies and procedures governing the Public Safety Radio Services and the Special Emergency Radio Service. The National Plan is contained in the Report and Order in Gen. Docket No. 87-112. The principal spectrum resource for the National Plan is the 821-824 MHz and the 866-869 MHz bands. The National Plan establishes planning regions covering all parts of the United States, Puerto Rico and the U.S. Virgin Islands. No assignments will be made in the 821-824 MHz and 866-869 MHz bands until a regional plan for the area has been accepted by the Commission.

§90.17 Local Government Radio Service. (a) Eligibility. Any territory, possession, state, county, town, or similar governmental entity, including a district and an authority, but not including a school district or authority or park district or authority except as provided for in

§90.242, is eligible to hold authorizations in the Local Government Radio Service to operate radio stations for transmission of communications essential to official activities of the licensee.

§90.19 Police Radio Service. (a) Eligibility.

Any territory, possession, state, county, city, town, and similar governmental entity including a governmental institution authorized by law to provide its own police protection, is eligible to hold authorizations in the Police Radio Service to operate radio stations for transmission of communications essential to official police activities of the licensee.

§90.21 Fire Radio Service. (a) Eligibility. Any territory, possession, state, county, city, town or similar governmental entity, and persons or organizations charged with specific fire protection activities are eligible to hold authorizations in the Fire Radio Service to operate radio stations for transmission of communications essential to official fire activities of the licensee. Applications from persons or organizations other than governmental entities must be accompanied by a statement from the governmental entity having legal jurisdiction over the area to be served, supporting the request.

SUBPART C - Special Emergency Radio Service

§90.33 Scope. The Special Emergency Radio Service covers the licensing of the radio communications of the following categories of activities: medical services, rescue organizations, veterinarians, handicapped persons, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities. Private carriers may also be licensed in the Special Emergency Radio Service solely to provide radio communications service below 800 MHz to any other eligible. Rules as to eligibility for licensing, permissible communications and classes and numbers of stations, and any special requirements as to each of these categories are set forth in the following section. Frequencies available for these categories of services are shown in a separate frequency table.

§90.35 Medical Services. (a) Eligibility. The following persons are eligible to hold authorization to operate radio stations for the delivery or rendition of medical services to the public and on a secondary basis, for transmission of messages related to the efficient administration of organizations and facilities engaged in medical services, operations.

(1) Hospital establishments that offer services, facilities, and beds for use beyond 24 hours of rendering medical treatment.

(2) Institutions and organizations regularly engaged in providing medical services through clinics, public health facilities, and similar establishments.

(3) Ambulance companies regularly engaged in providing medical ambulance services.

(4) Rescue organizations for the limited purpose of participation in providing medical services.

Appendix L

(5) Associations comprised of two or more of the organizations eligible under paragraph (a)(1), (2), (3) and (4) of this section, for the purpose of active participation in the direct operational control of the medical services communication activities of such organizations.

(6) Physicians, schools of medicine, oral surgeons, and associations of physicians and oral surgeons.

(7) Governmental entities and governmental agencies for their own medical activities.

(8) Governmental entities and governmental agencies for providing medical services communications to other eligible persons through direct participation in the direct operational control of the system, such as through central dispatch service.

§90.37 Rescue Organizations. (a) Eligibility. Persons or organizations operating a rescue squad are eligible to hold authorizations to operate radio stations for transmission of messages pertaining to the safety of life or property and urgent messages necessary for the rendition of an efficient emergency rescue service.

(b) Class and number of stations available. Each rescue squad will be authorized to operate one base station, and a number of mobile units (excluding hand carried mobile units) not exceeding the number of vehicles actually used in emergency rescue operations. In addition, each rescue squad will be authorized to operate a number of hand carried mobile units not exceeding two such units for each radio equipped vehicle actually used in emergency rescue operations.

§90.41 Disaster relief organizations. (a) Eligibility. Organizations established for disaster relief purposes having an emergency radio communications plan are eligible to hold authorizations to operate radio stations for the transmission of communications relating to the safety of life or property, the establishment and maintenance of temporary relief facilities, and the alleviation of the emergency situation during periods of actual or impending emergency, or disaster, and until substantially normal conditions are restored.

SUBPART N - Operating Requirements

§90.401 Scope. The subpart describes general operating requirements for stations licensed under this part. This includes station operating procedures, points of communication, permissible communications, methods of station identification, control requirements, and station recordkeeping requirements.

§90.403 General operating requirements. (a) Licensees of radio stations in the private land mobile radio services shall be directly responsible for the proper operation and use of each transmitter for which they are licensed. In this connection, licensees shall exercise such direction and control as is necessary to assure that all authorized facilities are employed:

(1) Only for permissible purposes;

(2) Only in a permissible manner; and

(3) Only by persons with authority to use and operate such equipment.

(b) In carrying out their responsibilities under §90.403(a), licensees shall be bound by the provisions of the Communications Act of 1934, as amended, and by the rules and regulations of the Commission governing the radio service in which their facilities are licensed; and licensees may not, through written or oral agreements or otherwise, relieve themselves of any duty or obligation imposed upon them, by law, as licensees.

(c) Each licensee shall restrict all transmissions to the minimum practicable transmission time and shall employ an efficient operating procedure designed to maximize the utilization of the spectrum.

(d) Communications involving the imminent safety-of-life or property are to be afforded priority by all licensees.

(e) Licensees shall take reasonable precautions to avoid causing harmful interference. This includes monitoring the transmitting frequency for communications in progress and such other measures as may be necessary to minimize the potential for causing interference.

§90.405 Permissible communications. (a) Stations licensed under this part may transmit only the following types of communication:

(1) Any communication related directly to the imminent safety of life or property;

(2) Communications directly related and necessary to those activities which make the licensee eligible for the station license held under this part. In addition, when communication service is provided under the cooperative sharing provisions of §90.179, the licensee providing such service may transmit communications related to the activities for which the parties receiving the service would be eligible to be licensed.

§90.407 Emergency communications. The licensee of any station authorized under this part may, during a period of emergency in which the normal communication facilities are disrupted as a result of hurricane, flood, earthquake or similar disaster, utilize such station for emergency communications in a manner other than that specified in the station authorization or in the rules and regulations governing the operation of such stations. The Commission may at any time order the discontinuance of such special use of the authorized facilities.

§90.411 Civil defense communications. The licensee of any station authorized under this part may, on a voluntary basis, transmit, communications necessary for the implementation of civil defense activities assigned such station by local civil defense authorities during an actual or simulated emergency, including

drills and tests. The Commission may at any time order the discontinuance of such special use of the authorized facilities.

§90.417 Interstations communication. (a) Any station licensed under this part may communicate with any other station without restriction as to type, service, or licensee when the communications involved relate directly to the imminent safety of life or property.

(b) Any station licensed under this part may communicate with any other station licensed under this part, with U.S. Government stations, and with foreign stations, in connection with mutual activities, provided that where the communication involves foreign stations prior approval of the Commission must be obtained, and such communication must be permitted by the government that authorizes the foreign station. Communications by Police Radio Service stations with foreign stations will be approved only to be conducted in accordance with article 5 of the Inter-American Radio Agreement, Washington, D.C., 1949, the provisions of which are set forth in §90.19(c).

§90.419 Points of communications. Normally operations licensed under this part are intended to provide intrastation mobile communications. For example, a base station is intended to communicate with its associated mobile stations and mobile stations are intended to communicate between associated mobile stations and associated base stations of the licensee. Accordingly, operations between base stations at fixed locations are permitted only in the following situations:

(a) Base stations licensed in the Public Safety and Special Emergency Radio Services may communicate with other base stations, operational fixed stations, or fixed receivers authorized in these services on frequencies below 450 MHz only on a secondary basis.

§90.421 Operation of mobile units in vehicles not under control of the licensee. Mobile station transmitters may be installed in vehicles operated by persons other than the licensee as provided in the following paragraphs when necessary for the licensee to meet his requirements in connection with the activities for which he is licensed. The number of units so installed, together with units installed in vehicles operated by the licensee, must not exceed the number of mobile units authorized to the licensee. When an insufficient number of units is licensed to cover such additional units, the license must be modified to add a sufficient number of mobile units. The licensee is responsible for taking any necessary precaution to effectively eliminate the possibility of unauthorized operation of transmitters when not under the control of the licensee.

(a) Mobile units licensed in the Local Government Radio Service may be installed in any vehicle which in an emergency would require cooperation and coordination with the licensee, and in any vehicle used in the performance, under contract, of official activities of the licensee. This includes ambulances, emergency units of public utilities, lifeguard units, and vehicles of contractors or other persons or agencies performing for the licensee under contract one or more of its local government functions. This provision does not permit the installation of radio units in non-emergency vehicles not performing governmental functions under contract but with which the licensee might wish to communicate.

(b) Mobile units licensed in the Fire Radio Service may be installed in any vehicle which may be alerted during a fire emergency. This includes emergency units of public utilities and water departments.

(f) Mobile units licensed in the medical services category of the Special Emergency Radio Service may be installed in the vehicle or be hand-carried for use by any person with whom cooperation or coordination is required for medical services activities.

§90.425 Station identification. - Stations licensed under this part shall transmit identification in accordance with following provisions:

(a) Identification procedure. Except as provided for in paragraph (d) of this section, each station or system shall be identified by the transmission of the assigned call sign during each transmission or exchange of transmissions, or once each 15 minutes (30 minutes in the Public Safety and Special Emergency Radio Services) during periods of continuous operation. The call sign shall be transmitted by voice in the English language or by International Morse Code in accordance with paragraph (b) of this section. If the station is employing either analog or digital voice scrambling, or non-voice emission, transmission of the required identification shall be in the unscrambled mode using A3E, F3E, or G3E emission, or International Morse Code, with all encoding disabled.

(d) General exemptions. A station need not transmit identification if:

- (1) It is a mobile station operating on the transmitting frequency of the associated base station.
- (2) It is a mobile station in the Police or Fire Radio Services using F1E or G1E emission.

§90.437 Posting station licenses. (a) The current original authorization for each station shall be retained as a permanent part of the station records but need not be posted.

(b) A clearly legible photocopy of the authorization for each base or fixed location shall be posted at every control point of the station.

The Monroe County Sheriffs Office hereby gives authorization to the Pleasantville Police Department to use the frequency 155.010 MHz under the FCC licensed call sign WSPL429. Installation for transmission purposes is limited to 15 mobile units under the immediate control of PPD. Use is limited to communications with base or mobile units of the Monroe County Sheriffs Office in furtherance of the official duties of each agency. Transmitter power and area of use are limited as follows:

Transmitter Output Power: **100 watts**

Area of Operation: **Town of Pleasantville**

By Authority of:

[Chief Administrator of Licensed Agency]

signature

Sample Interagency Agreement

Items of Note: The agency or organization giving authorization must be the one whose name the license is actually in. In the above example, the sheriffs office would have no authority to grant access to the frequency if it was licensed in Monroe County's name, specifically.

A licensee can generally give authorization for another agency to use its licensed frequency for communications with itself, the licensee. This should be specified in the agreement.

The entity receiving authorization is limited by law to all restrictions the license holder itself is under. It is important that the license holder specify those restrictions, typically power output and area of operation for mobile radios. The licensee has every authority to further limit use. For example, Pleasantville Police Department is only allowed to use the frequency within the town. The sheriffs office would likely be licensed country-wide or for a given radius around a central base station.

Authority should be given in the name of the chief executive or administrator of the licensed entity.

Montana CTCSS Tone Plan

Continuous Tone-Coded Squelch System (CTCSS) is often employed for protection of mobile relay and remote base receivers from interference. The following plan was originally developed in the early 1980's and has been widely used. It is hereby officially adopted as part of Montana's land mobile public safety frequency utilization plan.

Assignments:

County	Hz
Beaverhead	146.2
Big Horn	107.2
Blaine	114.8
Broadwater	100.0
Carbon	114.8
Carter	114.8
Cascade	141.3
Chouteau	131.8
Custer	167.9
Daniels	141.3
Dawson	146.2
Deer Lodge	107.2
Fallon	100.0
Fergus	162.2
Flathead	123.0
Gallatin	192.8
Garfield	162.2
Glacier	107.2
Golden Valley	151.4
Granite	141.3
Hill	107.2
Jefferson	156.7
Judith Basin	114.8
Lake	107.2
Lewis & Clark	203.5
Liberty	156.7
Lincoln	151.4
Madison	167.9

Assignments (Continued)

County	Hz
McCone	151.4
Meagher	107.2
Mineral	156.7
Missoula	146.2
Musselshell	131.8
Park	114.8
Petroleum	100.0
Phillips	156.7
Pondera	100.0
Powder River	156.7
Powell	114.8
Prairie	156.7
Ravalli	151.4
Richland	114.8
Roosevelt	131.8
Rosebud	151.4
Sanders	162.2
Sheridan	107.2
Silver Bow	100.0
Stillwater	156.7
Sweet Grass	162.2
Teton	151.4
Toole	162.2
Treasure	162.2
Valley	162.2
Wheatland	167.9
Wibaux	107.2
Yellowstone	146.2